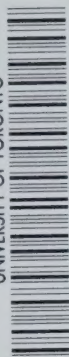


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Vol. 54
No. 1

Canadian
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▲ Lasers in
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▲ Le laser en
médecine dentaire

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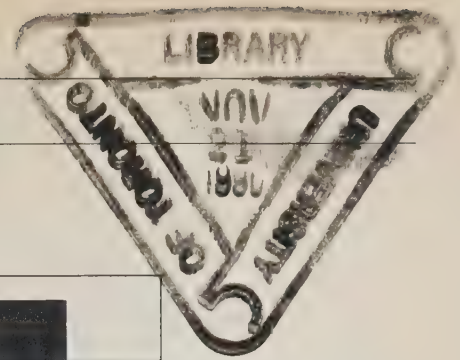
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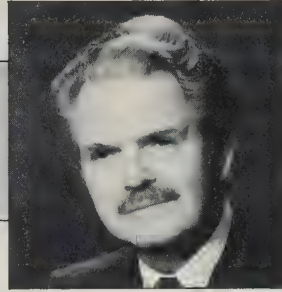
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JCDA — A new look and a new Editor



Readers will observe that portions of this edition of the Journal have a new look — and a new Editor. But isn't that what January is all about? Each New Year brings with it the opportunity to look back at what has been accomplished; to assess the inventory of today, and to cast a view into the future — planning for greater tomorrows.

The birth of this Journal in 1935 was in the midst of this country's darkest Depression. But it survived only because the principles and dedication to good journalism were seldom ignored. Despite extraordinary advances in the actual technology of publishing and layout, the Journal will only continue to flourish because the editorial edicts upon which it was founded stand firm.

There is, however, one serious difference between 1935 and 1988. It is competition. When Volume 1, Number 1, was issued 53 years ago, there were only 106 English language dental publications within the "Index of Periodical Dental Literature". Aletha Kowitz's 1985 book listing all the dental serials available, counts 645. A six-fold increase in 50 years! One of our Canadian dental libraries recently reported 63 *new* popular dental journals had appeared on its shelves in the past 20 years.

What then can this Journal do in the midst of strong competition, to retain readers and grow with the future? It must, it will, never lose sight of its foremost objective. It is the official, primary, mode of communication to the dental profession in Canada. This will always be a difficult task because the Journal is "different things to different people". A balance has to be maintained.

This Journal will continue to present in every issue new scientific knowledge from our Canadian scholars. We must never falter from the keystone of our profession; the inspiration, the encouragement and the dissemination of original research. Also, as each mail delivery to dental offices brings a deluge of information pertaining to new materials and modes, plus never-ending invitations to continuing education courses, the Journal has an obligation to inform its readers of the most recent practical, clinical, economic endeavors of a "marketplace" world.

The complexity of this political and economic environment assaults our profession from all sides. Our Association, in the democratic process, has duly elected officers to speak on its behalf. The Journal must bridge the gap between leaders and readers. It will continue to present the thoughts, the aspirations and accomplishments of the Association as it strives to fulfil its mandate of servitude to public and profession.

What is the role of the Editorial Staff and the Publications Committee within the context of the Journal? They must represent the policies of the Association; formulating, clarifying and vitalizing the questions and sensitivities of the day. They will continue to provoke thought, provide constructive criticism, and proclaim the truth, striving to present the broader issues of life as they represent the profession at large.

P. Ralph Crawford, DMD
Editor, JCDA

President's Column



Working toward excellence

The January issue of our Journal is the culmination of over a year of discussion, reassessment, planning and effort. You will be tempted to ask "so what else is new?" Given its history, you might be forgiven that attitude, but rest assured that our evaluation of the Journal, and its role in the Canadian Dental Association has never been scrutinized as closely as it has been over the last several months.

Along with the other roles our Journal must try to fulfill, it is the primary source of communication to our members on issues that affect Canadian Dentistry. We can write letters, send official communiqués, offer seminars, and talk at meetings, but this single medium is the only one that lands on everyone's desk once a month, like clockwork. It is our best opportunity to inform, and your best chance to stay informed. It therefore becomes our job to produce something that will earn the respect of the membership, and make all of us want to spend at least a bit of time browsing through every issue we get. If we can achieve this, our Journal will once again become the corner-stone of CDA Communications.

The new Editor of the Journal is Dr. Ralph Crawford. Dr. Crawford is a Past CDA President who has the respect and admiration of all segments of the dental community in Canada. Those of us who have been privileged to work with him over the years have witnessed the intense level of commitment he brings to any project. Many of us are fond of comparing Ralph to the proverbial bulldog who grabs hold of something, grapples with it, and won't let go until he wins. The Journal staff have worked hard and effectively to raise the professional status of our publication. Dr. Crawford is a leader who will work with them to refine the product according to our current needs.

We have a good Journal; we hope you will stay tuned over the coming months and years while we work to make it excellent. This will no doubt create some disappointment in a few circles. They won't have the Journal to kick around anymore.

*Ron J. Markey, DDS, MSD
President of the Canadian Dental Association*

Dr. P. Ralph Crawford Dentist is appointed editor of CDA Journal

A foreword:

We are all familiar with the fact that life is a series of crossroads, where we make decisions and choose directions that usually impact significantly on the quality of our lives. Similarly, businesses and institutions such as our own, must on occasion assess which future path to tread, for the benefit of their publics; in our case — the membership. That time has come for the Journal of the Canadian Dental Association.

For a number of years following this Journal's founding, in 1935, a succession of distinguished Canadian dentist-editors espoused, and built upon, the high ideals established by the late Dr. M.H. Garvin of Winnipeg. That pattern was broken in 1972, when a non-dentist editor was appointed to the post. Since that time, five journalist editors have occupied the chair, and the news and general interest articles portion of the Journal blossomed under their stewardship.

However, the arrangement has not proceeded without flaws. "It seems to most of us (dentists) that there is something to be said for a dentist editor, particularly in the writing of editorials, on dental subjects." This observation was made recently by Dr. Wesley J. Dunn, this Journal's second editor, who is now Professor in the Division of Community Dentistry at the University of Western Ontario.

"We have a sixth sense when reading an editorial, as to whether it is by a dentist or a non-dentist writer," he said. "There is a higher degree of credibility. The dentist has a sense of the profession that a non-dentist normally cannot attain."

State dental journals in the United States have, almost without exception, dentist editors. "It's in their by-laws," an American Dental Association official said. "Usually a managing editor, a professional journalist, manages the journal's production process, and serves next in line."

The philosophy behind the by-laws, the ADA official indicated, is generally similar to that as expressed by Dr. Dunn. It appeared that it was an opportune time to return to that mode for this Journal.

I trust that you will join with us in extending to Dr. Crawford our sincere best wishes for success in his new rôle.

Jardine Neilson
Executive Director

The newly-appointed Editor of the Journal has sought out a variety of careers since his early days in Winnipeg. The former packing house laborer, theatre manager and lay clergyman states that his life has been a series of "five-year plans," moving from one career to another or seeking variations and challenges within a career.

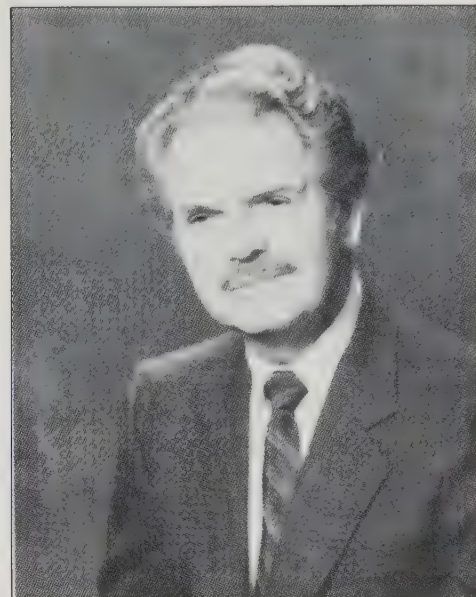
"I've always been terrified of a rut," says Dr. Crawford. "A rut in the road of life seems to have three sides, and it only needs one more side to move in before it becomes a grave."

The new Editor attended high school in Winnipeg, the University of Saskatchewan and the College of Notre Dame in Wilcox, Saskatchewan, through which he earned a BA from the University of Ottawa, in 1959. Since receiving his

DMD degree from the University of Manitoba in 1964, Dr. Crawford has conducted a private practice in Winnipeg, limiting his practice in the last 10 years to removable prosthodontics.

He has maintained a steady interest within the University of Manitoba's Faculty of Dentistry, as a part-time lecturer and demonstrator, since shortly after his own graduation. Currently he serves as Coordinator for the Faculty's "Drive for Excellence" as part of the University's fund raising goal of \$42 millions.

Dr. Crawford played an active role in the Manitoba Dental Association for a number of years and was its president in 1976. On the Board of Governors of the CDA since 1979, he was elected President of the national body in 1985.



Dr. P. Ralph Crawford

He was Manitoba's representative on the NDEB Board of Directors in 1978-80 and served as an NDEB Examiner in Prosthodontics from 1976 to 1986.

JCDA's Editor has a particular interest in Dentistry for the Elderly and is presently on the Board of Directors of the American Society for Geriatric Dentistry. He has also been Coordinator of Geriatric Dentistry at the University of Manitoba and is looking forward to chairing a National Symposium on Geriatric Dentistry in Winnipeg, April 22-24, next.

He is a Fellow of the American College of Dentists, the International College of Dentists, and a member of the Pierre Fauchard Academy.

Dr. Crawford has always had a keen interest in "things historical," and enjoys collecting antique dental equipment and memorabilia. Also, he was recently instrumental in the establishment of a small dental museum at the University of Manitoba's Faculty of Dentistry.

He is collaborating with Dr. Jack Abra, a former CDA president, in the writing of the first book on the "History of Dentistry in Manitoba."

He and his wife Olga have a family of two. Their son, Patrick, is a pharmacist in a rural Manitoba hospital, and daughter Aileen is enrolled at the University of North Dakota, seeking a career in Speech Pathology. Δ

CDA Executive Council approves infection control recommendations

The Executive Council and senior staff members of the Canadian Dental Association believed it was necessary to take immediate action in the urgent matter of infection control measures in the treatment of dental patients, at the third annual planning session held at Val David, Quebec, in mid-November.

The deliberations resulted in the approval of Recommendations for Infection Control in the Treatment of Dental Patients (including those with Hepatitis B, AIDS, and Other Communicable Diseases).

Plans for a two-day Conference on Infection Control, scheduled in Toronto for February 28 and 29, next, were also approved by the Executive Council.

Letter from President

Discussions also resulted in the decision that CDA President Dr. Ron Markey

would write to all dentists advising them of the CDA's official stance in dealing with infectious disease hazards, and commenting on the AIDS feature on CBC's "Marketplace" in response to some negative and possibly alarming impressions conveyed by that program. It was also decided that the letter would include recommendations for the treatment of AIDS patients, plus infection control procedures.

The Conference

The two-day Conference will be open, on the first day, to all dentists and their staff members and families and representatives of the dental industry, and will feature leading international experts, covering the latest scientific and ethical/legal information about infection control.

The second day of the Conference will be limited to official representatives of

dental organizations, the speakers, members of CDA's Health Care Committee, Management Committee and senior staff.

This day will be used to review draft CDA policies on infection control. A news conference will be held at the end of the conference.

Priority-setting session

The CDA Planning Session which is held annually in a retreat atmosphere, is an intensive three-day priority-setting exercise. This year it dealt with future directions for the CDA.

High on the list of priorities were: Strategic Planning and Budgets, Communications, Third Party issues, Personnel Resource Utilization, Membership, Government Relations, Taxation, Dental Awareness and Conventions.

CDA Infection Control Recommendations

The text of the Recommendations for Infection Control in the Treatment of Dental Patients (Including those with Hepatitis B, AIDS, and Other Communicable Diseases), is as follows:

1. The dental team should be familiar with and always practise acceptable infection control procedures and ensure that effective personal barrier protection is employed during the treatment of all dental patients (See Appendix I.)
2. With respect to AIDS:
 - (a) Dentists should be aware of the oral manifestations of AIDS and AIDS Related Complex (ARC), and be prepared to refer suspect patients for appropriate medical investigation.
 - (b) Health and Welfare Canada has advised that there is no medical reason why AIDS patients should not be treated in the private dental office with appropriate precautions. However, as such patients are often hospitalized and may have many complicating medical problems, treatment in a hospital dental unit may be more appropriate.
 - (c) Dental care for AIDS and symptomatic ARC patients should be given after consultation with the attending physician.
 - (d) In the dental care of AIDS patients, emphasis should be given to the maintenance of optimal oral hygiene. Since AIDS patients have compromised resis-

Appendix I

Text of "Canadian Dental Association Infection Control Procedures"

The following infection control procedures should be used routinely to minimize the risk of transmitting AIDS and other infectious diseases from patients to dental personnel or from patient to patient, through the dental office:

- gloves should be worn in treating all patients;
- masks should be worn to protect oral and nasal mucosa from splatter of blood and saliva;
- eyes should be protected with some type of covering to protect from splatter of blood and saliva;
- rubber dam should be used in restorative dentistry, wherever possible;
- sterilization methods known to kill all life forms should be used on dental instruments. These include steam autoclave, dry heat oven, chemical vapor sterilizers and chemical sterilants;
- handpieces employed in all surgical procedures (or used with hepatitis and AIDS patients) should be sterilized according to the manufacturer's directions;
- attention should be given to cleanup of instruments and surfaces in the operatory. This includes scrubbing with detergent solutions and wiping down surfaces with iodine or chlorine (diluted household bleach) solutions; and
- contaminated disposable materials should be handled carefully and discarded in plastic bags to minimize human contact. Sharp items such as needles and scalpel blades should be contained in puncture-resistant containers prior to disposal in the plastic bags.

Studies from the Centers for Disease Control in Atlanta, Georgia, report that clothing exposed to the AIDS virus may be safely used after a normal laundry cycle. A high temperature (60 to 70 degrees centigrade) wash cycle, with normal bleach concentration, followed by machine drying (100 degrees centigrade or more) would be preferable if clothing is visibly soiled with blood or other body fluids. Dry cleaning and steam pressing will also kill the AIDS virus, according to these studies. △

Adapted from the American Dental Association Policy on Infection Control Procedures
The above is that portion of the Atlanta Guidelines applying to the practice of dentistry.

tance, treatment should be done with appropriate antibiotic prophylaxis.

(e) Symptomatic ARC patients may be offered comprehensive dental treatment with antibiotic cover, where appropriate.

(f) Asymptomatic but HIV positive individuals may be treated using effective personal barriers as otherwise healthy patients.

(g) AIDS is a reportable disease in several Canadian provinces.

Conference Highlights

Chairman — Dr. Ken Zakariasen, Dean, Faculty of Dentistry, Dalhousie University, Halifax, N.S.

Scientific Sessions

Infection Control — A General Practitioner's Perspective — Dr. Ray Wenn, Charlottetown, P.E.I.

A Review of AIDS in Canada — Dr. Alan Meltzer, Senior Medical Advisor on AIDS, Federal Centre for AIDS, Ottawa, Ontario

AIDS — An Overview — Dr. Janice Handlers, Department of Oral Pathology, University of Southern California, Los Angeles

Ethical/Legal Session Panel Discussion

Dr. Roy Thordarson, Executive Director and former Registrar, College of Dental

Surgeons of British Columbia, Panel Chairman

Ms. T. Tremayne-Lloyd, L.L.B., Chairperson, Canadian Bar Association Committee on AIDS, Toronto, Ontario

Dr. Ben Freedman, McGill Centre for Medicine, Ethics and Law, Montreal.

AIDS Patient — T.B.A.

With the insight provided at this conference, selected national and provincial delegates will meet February 29, 1988 to review existing CDA policies on Infection Control. The CDA is treating the important issue of Infection Control as one of its highest priorities for 1988. Δ

CDA Conference on Infection Control Sunday, February 28

REGISTRATION FORM

Conference Registration: Deadline February 19, 1988.

Note: Early registration will help in securing your hotel reservation and assist CDA in planning this conference.

Location: Toronto Ballroom, Hilton International, 145 Richmond Street West, Toronto, Ontario. M5H 2L2 (formerly the Westin Hotel).

Time: 8:00 a.m. — 5:00 p.m. (lunch will be provided).

Canadian Dental Association Conference

Please complete appropriate category

Dentist:

☐ General Practitioner

☐ Specialist _____ (Specialty Group)

Before Feb. 19 After Feb. 19

☐ CDA Member/Foreign Dentist \$100 \$150 _____

☐ Non-Member \$150 \$200 _____

If accompanying a CDA Member:

☐ Dental Spouse \$ 75 \$100 _____

☐ Hygienist \$ 75 \$100 _____

☐ Dental Assistant/Office Personnel \$100 \$150 _____

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Name: ☐ Miss ☐ Mrs. ☐ Ms. ☐ Dr. ☐ Mr.

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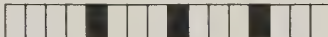
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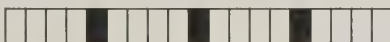
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Cheques, Visa and Mastercard will be accepted.

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☐ Visa — Card Number: 

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Cancellation Policy: A full refund will be given if you cancel before February 19. No refund will be given after that date.

Simultaneous Interpretation will be provided.

Send Registration Form and Payment to:
Canadian Dental Association
1815 Alta Vista Drive, Ottawa, Ontario K1G 3Y6
Attention: Accounting Department

CANADIAN DENTAL ASSOCIATION CONFERENCE HOTEL RESERVATION FORM

Important Notes:

1. Hotel reservations will be confirmed by the Hilton International.
2. Room reservations will be held until 5:00 p.m. on the day of arrival. To guarantee your reservation please fill in the required credit card information for Visa, Mastercard or American Express. Cancellation notice must be given to the hotel at least 24 hours prior to date of arrival.
3. Deadline for Reservations: February 5, 1988.
4. Enquiries concerning accommodation or special requests should be directed to the hotel.

Rates: \$105 single or double

Name: _____

Address: _____

City: _____ Province: _____ Postal Code: _____

Telephone Nos: (Bus.) _____ (Res.) _____

Type of room required:

☐ Single ☐ Double ☐ Twin ☐ Triple ☐ Other

Suites available upon request.

Arrival date: _____ Time: _____ Departure date: _____

Name(s) of other occupant(s) if sharing _____

Reservation Guarantee:

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Toronto**

145 Richmond Street West, Toronto, Ontario M5H 2L2
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Did you know?

It was a dental forensic team, led by Dr. Allan J. Warnick of Detroit, that positively identified 129 of the 156 people killed in one of U.S.A.'s worst air disasters? When Northwest Airlines Flight #255 crashed August 16, 1987, Dr. Warnick's ID Team was on the scene within 2 hours.

U.S. occupation safety agency imposes strict protection measures

The United States Occupational Safety and Health Administration (OSHA) has ruled that dentists with office employees must provide staff with materials and information they need to protect themselves against infectious diseases.

A report in the *ADA News* goes on to report that dentists who fail to educate their office workers in ways to guard against contracting infectious diseases, specifically hepatitis B and AIDS, could face stiff fines, as much as \$10,000, for each infraction. In addition, the OSHA rules that dentists must also supply their office personnel with protective gloves, masks, and eyewear, and adhere to office hygiene procedures described in the infection control guidelines recommended by the Centers for Disease Control (CDC) and the American Dental Association (ADA).

"Health care professionals are obliged under the law to provide office staff members with a safe, sanitary workplace," according to Stephen Lowe, special assistant for regulatory affairs at OSHA. "Employees must have a right to protection against hazardous materials."

Dentists and other health care professionals in the United States were to be notified in writing late last fall that those with office employees must follow the CDC infection control guidelines, or risk legal action and a fine. Mr. Lowe said notification was sent by early November to dentists and physicians with employees, hospitals, clinics, nursing homes, laboratories, and all other health care facilities where office staff members are employed. Notification was also sent to police and firefighters, trade unions, associations, and other such groups.

The OSHA notification included a covering letter alerting employers to the dangers of blood-borne diseases, detailing the steps that should be taken to protect office workers from infection, and outlining the agency's enforcement procedures. The mailing was also to include the CDC guidelines, then being revised, and materials employers may use to educate office workers in infection control.

"Health professionals can decide how to train their employees, but the important point is that they must be trained," Mr. Lowe said. He added that the responsibility for instructing employees and

ensuring that infection control procedures are followed, rests with the employer.

The OSHA perceives dentists as health professionals who are most willing to follow infection control procedures, Mr. Lowe said. "Our sense is that the dental community is much more in compliance than the rest of the health care community."

Established in 1970

The Occupational Safety and Health Administration was established by an act of the United States Congress in 1970. It regulates workplace health and safety standards in roughly half of the U.S. states. The remaining states are governed by state level OSHA programs.

It was noted that any punitive action taken would probably result from a complaint lodged either by an employee or a patient.

"If an employee has not been trained and is not wearing protective clothing, there is a possibility of being cited," Mr. Lowe said. He added that the amount of the fine would be determined at OSHA's discretion. Other sources have said that a fine for a first offence would probably be nominal.

"We are not out to collect dollars," Mr. Lowe said. "Our job is to achieve abatement. If a violation is corrected immediately, that employer will be treated better than someone who ignores the notification."

He believed that employers would already be complying with the regulations when the notifications were mailed.

"This is a major new step for OSHA into the health care field. This action is due to the high level of concern about AIDS and also, hepatitis B. We are taking an aggressive stance on enforcement to protect employees in the workplace." △

Did you know?

Of the 734 respondents to the 1987 SRI Gallup poll of American households, 64% rated the ethical standards of the dentist either "very high" or "high". This was an increase of 13% over 1983.



Dr. William F. Wathen

Dr. William F. Wathen named ADA Editor

Dr. William F. Wathen, a general practitioner from Fort Worth, Texas, has been named editor of the American Dental Association. He now heads the Editorial Division of the ADA, responsible for publication of the *Journal of the American Dental Association*, the *ADA News*, *Special Care in Dentistry*, *Dental Abstracts* and the upcoming *Dental Teamwork*.

Dr. Wathen received his DMD from the University of Kentucky in 1967 and served in the US Air Force from 1967-70 before entering private practice in Fort Worth. He received an undergraduate degree from the University of Kentucky in psychology, in 1963.

He served as editor of the *Texas Dental Journal* from 1975-86 and since 1986 has been a member of the Texas Dental Association's board of directors.

Dr. Wathen is also clinical professor, oral diagnosis and oral medicine at the Texas College of Osteopathic Medicine.

Dr. Wathen fills the role that has been vacant for 18 months, since the departure of Dr. Roger Scholle. △

New research program established for dental clinical scientists

The Alberta Heritage Foundation for Medical Research has announced a new research programme, in conjunction with the Faculty of Dentistry at The University of Alberta, for the training of clinical scientists. The awards (Dental Fellowships), to a maximum of six years will support training in research which can lead to a higher research degree of The University of Alberta to be followed by training in a clinical speciality approved by the Royal College of Dentists of Canada. The competition for the first two awards will be held in 1988.

The research opportunities at the Faculty of Dentistry at The University of Alberta include studies under the direction of Dr. G.R. Holland which encompass several aspects of the innervation of the mouth, in particular the structural basis of pain from the tooth and the response of oral nerves to various forms of damage. Research involving connective tissues with particular interest in periodontal tissues, temporomandibular joint function and wound healing is available under the direction of Dr. P.G. Scott. Opportunities exist for research in epidemiology of dental disease under the supervision of Dr. J.A. Hargreaves and Dr. G.W. Thompson. Research studies in dental aspects of immunology are being conducted under the direction of Dr. F.M. Eggert. New research directions in the field of applied pharmacology are available under the direction of Dr. D.M. Paton. Other research areas also are available at the Faculty of Dentistry and in other departments within The University of Alberta.

The Faculty of Dentistry has access to current major research equipment including E.M. and animal facilities.

The intention of the new awards is to train Canadian clinical dental scientists for research and academic positions in Alberta and in Canada.

Further details can be obtained from Dr. J.A. Hargreaves, Director of Graduate Studies and Research at the Faculty of Dentistry at The University of Alberta, Edmonton, Alberta, T6G 2N8, Canada. △

CDA Board adopts tobacco products and health policy

In full support of the federal government's initiatives in proposed tobacco control and advertising legislation and in concert with a similar resolution passed by the Canadian Medical Association, the Board of Governors of the Canadian Dental Association adopted its "Policy on Tobacco Products and Health" at its 1987 Annual Meeting.

The text of that policy is as follows:

Practising dentists see firsthand the initial signs of oral problems that arise when individuals use tobacco products, including smokeless tobacco. Dentists are concerned that tobacco products have been shown to contribute to oral diseases, including oral cancer.

The use of tobacco products is the leading cause of preventable death and disease in Canada, accounting for some 30,000 deaths annually. The Canadian Dental Association recognizes, with deep concern, the effects of the use of tobacco products, including smokeless tobacco, on both general and oral health. The following policy affirms the need to eliminate the use of all tobacco products in Canada and establish a norm of non-smoking as a social attitude for Canadians.

1. The Canadian Dental Association applauds government's efforts to ban all advertising and promotion of tobacco products.
2. CDA urges that regulations prohibiting the sale of all tobacco products to minors be strictly enforced.
3. CDA encourages governments to develop educational programs aimed at smoking prevention among Canadians in general, but particularly in our school systems.
4. CDA urges dentists to set an example to the general public by not using tobacco products.
5. CDA encourages dentists to place no smoking signs in their reception areas and declare their offices smoke-free environments.
6. CDA urges governments to encourage those engaged in the cultivation, production and sale of tobacco products to find alternative crops and to diversify into alternative activities.
7. CDA urges the prohibition of exporting tobacco and tobacco products, especially to Third World countries.
8. CDA urges that the health of non-smokers be protected by banning smoking in all public places, through provincial legislation and/or municipal bylaws, and specifically urges that smoking be banned in all workplaces, schools, health care facilities and public transport systems.

As evidence of CDA's commitment to the above policy, it has:

- (a) already declared a no smoking clean air policy for its work and meeting environments; and
- (b) adopted a policy of refusing to accept tobacco advertisements in any of its publications.

Because of the experience of the dental profession with the oral manifestations of problems associated with the use of tobacco products, it is our moral and professional responsibility to encourage, as an on-going priority, the eradication of the use of tobacco products. △



Computer offers fast access to vast store of dental information

The last 25 years have seen overwhelming growth in the amount of new information and knowledge transmitted in the field of dentistry. Due to extraordinary developments of computer and communications technologies, there is a new approach to the retrieval and handling of dental research and information.

With the emergence of affordable personal computers, health libraries have substantially increased user awareness by providing information to those in the field with speed and accuracy.

The Canadian Dental Association's Sydney Wood Bradley Memorial Library has been providing a valuable source of continuing education for practising dentists in Canada as well as reliable library services to student members and users from other dental related fields.

Our Resource Centre is now automated so our information retrieval system makes possible not only speedy results but because of the design of the computer system, search strategies are more thorough.

Since 1982, the CDA Resource Centre has been conducting an increasing number of literature searches on the MEDLARS collection of data bases. MEDLARS is the computerized literature retrieval system of the U.S. National Library of Medicine in Maryland. This system of data bases, which provides access to the world's professional literature in health sciences, contains over 9.5 million references to journal articles and books.

If a patron requests a MEDLARS search from the CDA Resource Centre, there is almost unlimited freedom in choosing the terms that define the search. Articles in computerized data bases are classified by as many as 10 to 20 subject headings or key words. So a search can be conducted by subject descriptions, specialized jargon, new drug names, recent technical terms or any other tailor-made descriptor.

Awareness service

The MEDLARS system can also be used to provide a current awareness service. The requester's original search is stored in the computer and updates are then sent automatically to the requester twelve times a year. This is called SDI.

Once the requester has received the results or printout of the computer search, the Resource Centre will photo-



Martha Vaughan, BA, MLIS
CDA Librarian

copy those journal articles of value. The library currently holds over 150 dental journals and plans to continue to build upon this collection.

As a further service to our users, we provide a set of reprints called a Table of Contents, this is the contents page from our journal collection and is available on a monthly basis on request. This service exists to enable members of CDA to have

constant access to information from a variety of journals on a continuous basis.

The Resource Centre also produces a "Package Library". This is a series of selected articles on topics of interest to the dental community and advertised each month in this *Journal*. One copy of each article is provided either upon request or automatically each month.

The library is staffed five days a week between 8:30 a.m. and 4:30 p.m. and is available to respond to any type of general or specific inquiry.

Open to visitors

Should the opportunity arise, the library is also open to use by visitors. In addition to the journal collection, we have materials of an archival nature, dealing with the evolution and history of dentistry as well as a selection of books and dental texts.

The Sydney Wood Bradley Memorial Library has established itself among the libraries in the health community in Canada and the United States, thus, in addition to our immediate services, we act as a gateway and link between those in the dental community provincially, nationally and internationally. Δ

ADA committee set up for concerns, needs, of young dentists

Following a year and a half of research and planning, a new American Dental Association committee on young dentists came into existence at the end of the ADA Annual Meeting last October.

The Commission on the Young Professional has assumed the responsibilities of the Special Committee on Young Dentists, which earlier served to develop the full-fledged Commission. It will address the concerns and special needs of the young dentist in the United States.

During the development period, a highly successful first National Conference was staged last August, and attracted about 300 participants.

When the new Commission was established, the earlier founding committee stated in a resolution that constituent societies should be encouraged to set up committees on young dentists within their own ranks and to expand opportunities for leadership services by young dentists.

Suggested preliminary goals also included a recommendation that 30 per cent of ADA's leadership positions be held by dentists under the age of 40, by 1997.

Some of the recommendations relating to ADA activities included addressing benefits and barriers to membership based on Department of Membership Services data; supporting the liaison with the American Student Dental Association; studying policies related to licensure by credentials, and working with the Commission on Dental Accreditation to develop uniform standards for graduation. Δ

Ad Lib

by Cuspid

Dentists in politics

Five physicians sit in the House of Commons — roughly one tenth of the number of honourable members who are lawyers. There are, to my knowledge, no representatives of the dental profession in that august chamber.

This seems strange. After all, if Canada has some 14,000 dentists, one would have thought that at least a brace of them might have successfully sought political office. But their training, as psychiatrist Dr. Bernice Ennis once told a meeting of the American Medical Writers Association, emphasizes the centrality of their existence, makes them individualists and leaders. Actually, Dr. Ennis was referring to MDs' training . . . but the same applies to dentists.

Whatever the effects of training, dentists' *experience* would seem to equip them admirably for politics. They deal in their day-to-day professional lives with people from all walks of life . . . and they witness at first hand the effects of such politically changeable factors as poor housing or nutrition upon health.

Beyond that, dentists are members of a helping profession — one on one with the individual patient. Politics is — or should be — an extension of that compassion and concern . . . but on behalf of the community at large.

Of course, the sacrifices are enormous. Unless the dentist Member of Parliament continues to serve his professional — as well as his political — constituency and continues to practice dentistry, there is not only a significant drop in income but also the prospect of dental skills becoming rusty. Lawyers, by contrast, prosper in politics because it affords them the opportunity to hone the legislative skills — and, one might add, the jousting and adversarial ones — that are their stock in trade.

Sir Charles Tupper, a physician who was briefly prime minister of Canada in the 19th century, found that the demands of public office did not fit well with those of medical practice. Sir William Osler described his fellow MD as a brilliant example of a doctor in politics, but observed that "he never really served two masters; from 1855 he was a politician first and a practitioner only when stranded by the exigencies of party".

Yet individual professional sacrifice might benefit the profession of dentistry as a whole. While bringing to politics the experience of public duty and service learned in their training and their work, dentists can provide a voice for their colleagues in the corridors of power. With governments exerting increasing influence and control over all aspects of our lives it's no longer enough to shout from the sidelines: dentists should help to shape policy if they are to retain any kind of professional autonomy.

Perhaps the most promising way to encourage dentists into politics is to provide assurances that taking up a political career doesn't mean abandoning forever a professional one — and to provide incentives, possibly in the form of profession-generated funding, that will allow for painless re-entry to the world of dentistry after a spell in the heady atmosphere of politics. △

Obituaries/ Nécrologie

Charest, Armand: Diplômé de l'Université de Montréal en 1948, le Dr Charest est décédé le 15 octobre dernier. Il exerçait sa profession à Plessisville, Québec.

David, René: Né en 1921 et diplômé de l'Université de Montréal en 1946, le Dr David est décédé il y a quelques mois. Il exerçait sa profession à St-Hyacinthe, Québec.

Gagné, Claude: Diplômé de l'Université de Montréal en 1968, le Dr Gagné habitait à Montmagny, Québec, et y exerçait sa profession.

Lessard, Pierre: Diplômé de l'Université de Montréal en 1969, le Dr Lessard habitait à Thetford Mines, Québec, et y exerçait sa profession.

Losier, Guy: Diplômé de l'Université de Montréal en 1959, le Dr Losier exerçait sa profession à Tracadie, Nouveau-Brunswick.

MacLeod, A.A.: Dr. MacLeod resided and practised in Forest, Ont. He was a graduate of the University of Toronto in 1940.

Michaud, François: Né en 1943 et diplômé de l'Université de Montréal, le Dr Michaud exerçait sa profession à Montréal.

Moore, Wesley R.: Dr. Moore resided and practised in Sarnia, Ont. Born in 1927, he was a graduate of the University of Toronto in 1950.

Sommerville, Donald A.: Dr. Sommerville, who conducted a practice in Bristol, New Brunswick, was born in 1902. He was a graduate of McGill University, Montréal, in 1925.



ARE YOUR PEARLY WHITES HEADING FOR THE PEARLY GATES?

Adult tooth loss is a serious problem. How serious? One half of all Canadians over 60 are completely toothless! Major cause: gum disease. Don't let it happen to you. Floss and brush carefully. And see your dentist for preventive checkups.

DENTAL HEALTH
Good For Life

CANADIAN DENTAL ASSOCIATION

Superlative facilities, stunning scenery, await CDA Convention delegates

Hosted by the Alberta Dental Association

Are you looking for a place to take your family this summer and at the same time standing a chance to win Air Canada's Early Bird Draw — with odds likely to be less than 1,000 to 1?? How about the opportunity of meeting some of those classmates and friends from across Canada?

Then why not plan to attend the 1988 CDA Convention in Edmonton, Alberta, August 21-24. When you also consider the attraction of the world-famous West Edmonton Mall and the Alberta Rockies, the answer should be a definite — WHY NOT?

Our scientific program is being finalized and will include such subject matter as implants, aesthetics, practice management, update on AIDS, and infection control, capitation and dentistry and the law. We will even include a lecture on the dentists' nemesis — lower back pain — how to prevent it.

The Royal College of Dentists of Canada will be holding a conjoint symposium on TMJ problems. There will also be the Grieve Memorial Lecture on orthodontics, and for the first time, a Murray MacDonald lectureship, sponsored by the Canadian Fund for Dental Education.

Congregate in '88

Our social program is also being finalized and will include a Sunday evening welcome buffet with entertainment by Ukrainian dancers, a Monday evening hospitality event at the West Edmonton Mall, where you can choose to visit the famous indoor Waterpark, Fantasyland, or just shop and visit the hundreds of stores in the world's largest indoor Mall. This evening is also being held open for class reunions, which can be arranged with our assistance. Tuesday, there will be a spectacular evening at Fort Edmonton Park, with dining, entertainment and dancing to the music of a popular and versatile orchestra.

Future information

Future editions of this Journal will provide further details, advance registration



Dr. Herb Link, Chairman

forms, and accommodation information. The Registration Forms will appear here in the March edition.

If you require prior information, please do not hesitate to contact us through the CDA Headquarters in Ottawa.

Plan a visit or family vacation in Edmonton, Alberta, in August, and enjoy the CDA Convention at the same time.

Cosmopolitan city

Edmonton, with a population of 755,494, is the largest North American city north of the 53rd parallel, and is becoming known as one of the most exciting and cosmopolitan cities on this continent.

Most Canadians are well aware of Wayne Gretzky and the West Edmonton Mall, but Edmonton has much more to offer. There are excellent and convenient golf courses and a wide variety of other



Spectacular scenery in the Alberta Rockies, along the Banff-Jasper highway, a convenient and highly memorable side trip for visitors to the Convention. (Featured — Peyto Lake.)

sports facilities in the city and immediate environs, a fascinating range of dining experiences, and, of course, the shopping possibilities can boggle the mind.

Cultural activities and attractions abound. There is live theatre, opera, symphony concerts and ballet company performances of international calibre. Edmonton's Citadel Theatre, close to the Convention Centre, features top name actors and productions.

Nor is Edmonton found wanting in night life. Contemporary entertainment, with rock, country, blues and jazz modes prevail in the city's clubs, lounges and concert halls.

There are art galleries and museums — some rather unique, such as the Ukrainian Canadian Archives and Museum, Canada's Aviation Hall of Fame, Edmonton Police Museum, the Alberta Pioneer Railway Museum, and the Strathcona Archaeological Centre. Alberta's Provincial Museum is second to none.

To catch the flavor of the pioneer West and the excitement of life in the territories more than a century ago, one needs only to visit Fort Edmonton, a short distance west of the city.

The Convention Centre

Edmonton's modern Convention Centre, which will be the scene of most of the Convention events, including the exhibit area, was voted the "outstanding facility of the year" in Canada when it was completed. The spectacular structure was built into the banks of the North Saskatchewan River valley, and features four levels of glass, cascading down the hillside. It offers a view that is truly magnificent, from many angles.

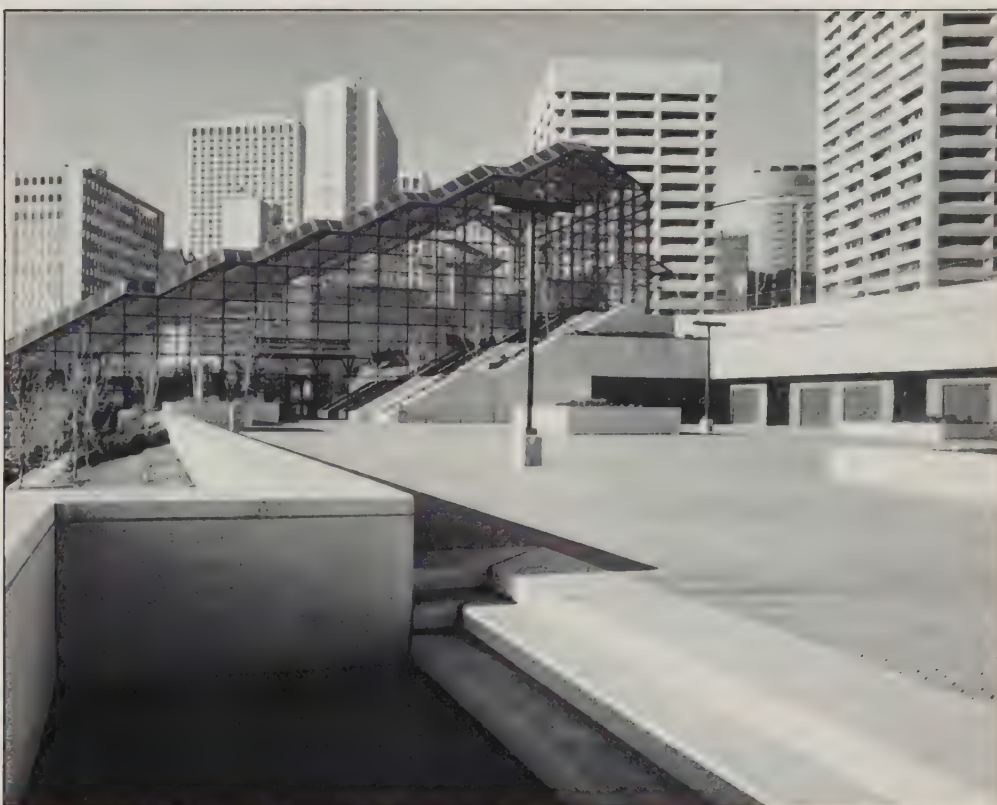
The Mall

Although it isn't in Texas, the West Edmonton Mall apparently can still be truly described as the world's largest shopping mall complex. Even those (husbands?) who normally have to be dragged kicking and screaming into a shopping mall, will willingly visit this one.

It contains more than 800 stores and services, along with features such as: the world's largest indoor amusement park with more than 20 rides, a 40-foot indoor lake, with rides in submarines, four trained dolphins, and an 80-foot replica of Christopher Columbus' ship the Santa Maria. There is also a five-acre indoor lake, an 18-hole miniature golf course, animal displays and an NHL-size skating rink. △



The modern skyline of downtown Edmonton.



A view of the facilities at the Edmonton Convention Centre.



Dr. Michael Eggert

Dr. Michael Eggert, professor in the Division of Periodontics, Department of Stomatology, Faculty of Dentistry, University of Alberta, was recently named Chairman of the CDA Committee for Consumer Products Recognition.

Dr. Eggert obtained his DDS, MSc, in Biochemistry and Diploma in Periodontics, from the University of Toronto. He later was awarded his PhD in Immunology from the University of Cambridge for research on salivary glycoproteins that react with oral bacteria. He worked as a post-doctoral Fellow at the Royal College of Surgeons of England on the development of an animal model of periodontal disease. Dr. Eggert also served as a lecturer on the development of immunoassays for measuring human antibodies against oral bacteria.

Since 1981, he has served in his present capacity at the University of Alberta. Dr. Eggert has served with distinction and was the recipient of the Alberta Heritage Foundation Medical Research grant for the establishment of an immunological laboratory. His current research involves clinical testing of immunochemical methods for immunodiagnosis of periodontitis and dental caries. Dr. Eggert is also involved in clinical trials of different periodontal treatment modalities.

Dr. Eggert conducts a private practice as a periodontist in Edmonton, Alberta, and has a special interest in the use of chemotherapeutic agents during treatment of juvenile, advanced and refractory periodontitis.

He is presently on sabbatical at the Faculty of Dentistry, University of Toronto. △

The national AIDS information campaign developed by the Canadian Public Health Association (CPHA) in collaboration with Health and Welfare Canada has announced a new brochure for the General public — "The New Facts of Life" — offering basic information about AIDS.

The 20-page booklet has been designed to be simple, yet complete as is possible for a publication of that size. "The brochure," said CPHA AIDS Education and Awareness Program Director Dr. David Walters, "provides straightforward answers to questions and encourages Canadians to get involved and protect themselves and the community, in limiting the spread of the epidemic."

The brochure replaces "AIDS in Canada: What You Should Know," which was last published in 1986 by Health and Welfare Canada.

Printed in an attractive, three-color format, the new brochure has been widely distributed through provincial health departments, National Health and Welfare, community AIDS groups, and university health departments. Persons wishing a copy, should contact their local health unit. △

We have been advised that the fear of contracting acquired immunodeficiency syndrome (AIDS) has led to the occurrence of a new condition in which victims develop mock symptoms of AIDS. Even after antibody tests have proved negative, pseudo-AIDS patients remain unconvinced of their apparent healthiness and most psychogenic symptoms remain.

These individuals exhibit depression, fatigue, anxiety, and some weight loss. Most can be successfully treated with psychotherapy, relaxation therapy and anti-depressant medication.

The condition has been termed FRAIDS (fear of AIDS). △

Franzini, L.R. Amer Health 6 (6): 12, 1987.

Dr. Don C. Johnson was recently elected President of the Saskatoon Dental Society for the 1987-88 term.

Other officers named were Dr. Maureen M. Tynan, as Vice-President and Dr. David P. Saganski, as Secretary.

Some of the major elements of the Society's dental program include a Dental Emergency Service, conducted by Society

members for the citizens of Saskatoon. (Access via a telephone listing in the yellow pages): sponsoring an annual Students' Table Clinic Competition for fourth year students at the University of Saskatchewan, and, a Video Study Club to assist in the continuing dental education of the Society members. △

ERRATUM

In publishing, anything that normally shouldn't go wrong, usually does.

In the news account of the "IADC Congress, a huge success," JCDA. Vol. 53. No. 10:728 (October), there was a reference to "Dr. Dennis Schmidt, Professor or Biomaterials, University of Toronto."

Somehow, the error went through the entire editing and proofreading processes, without being detected.

Our correspondent, Dr. Marvin Klotz, and the JCDA editorial staff sincerely regret the oversight and any embarrassment it may have created for **Dr. Dennis Smith**, whose name was intended in this news account. △

The Quebec Association of Pediatric Dentists recently honored Dr. Roberta Dundass as a Life Member. Dr. Dundass is widely recognized as one of the pioneers of pediatric dentistry in Canada.

After receiving her dental degree from McGill University in 1947, she completed graduate studies at the University of Michigan in 1952. In addition to her private practice, Dr. Dundass played an active teaching role in the dental faculty at McGill, where her service spanned 26 years. She acted as department coordinator, clinical demonstrator, and finally, as associate professor.

She retired in 1985.

Dr. Dundass is presently enjoying retirement at her cottage in the Eastern Townships of Quebec. △

Brian Henderson, CDA's Director of Accreditation and Education has been named an Honorary Member of the Canadian Society of Ambulance Personnel.

A recent message from the President of that Association, Mr. R.J. McManus, indicated the honor was long overdue to Mr. Henderson, in view of "your most extraordinary efforts to bring this Society into existence."

The Society's board members, Mr. McManus said "voted unanimously to



Brian Henderson

accept you as an Honorary Member and as such, you are entitled to all the rights and privileges of the Society without the necessity of paying any dues." Δ

The first European meeting on dental and maxillofacial radiology was held recently in Geneva, Switzerland.

There were approximately 130 registrants, representing 23 countries. Two non-Europeans attended, one from Israel and one from Canada (Dr. H.G. Poyton, of Toronto — who sent this report to JCDA).

There were about 35 short scientific presentations. The subject matter of the majority of these was apparatus and physics, and a few, on interpretation. All were presented in English.

On the business side, discussion dealt entirely with the formation of a European Society with regular meetings. There was concern that such a Society would encroach upon the field of the International Association of Dento-Maxillo-Facial Radiology. However, assurances were given that this was not the intent, and a European Society could co-exist.

As a result of a questionnaire, it was decided to proceed with the establishment of a European Society. A working committee of three has been appointed, with Lars Hollender as chairman.

The mandate of the committee, in addition to the organization of the Society, includes preparing for the inaugural meeting, to be held in Kuopio, Finland, in the second week of June, 1989. Δ

CDA Retirement Savings Plan

Unit values: (Funds are valued weekly)

Fund	Unit values as at	
	November 30, 1987	October 30, 1987
Fixed Income Fund	57.02916	58.03775
Common Stock Fund	123.67190	121.17867
Money Market Fund	38.98173	38.78687
Balanced Fund	23.20733	23.31697

Interest rates:

Guaranteed Fund

Term

1 yr

2 yr

3 yr

4 yr

5 yr

*Interest rates as at
November 30, 1987 October 30, 1987

9.25% 9.35%

9.60% 9.75%

10.00% 10.10%

10.10% 10.25%

10.35% 10.50%

(*rates subject to change without notice.)

Total Assets (Market value) of the Plan as of:

November, 1987	October 30, 1987
\$80,938,283	\$80,739,228

For further information:



Write:

CDSPI

Retirement Services Dept.

Suite 600

2 Lansing Square

Willowdale, Ontario

M2J 4Z3

or phone, toll-free:

Western and Atlantic Canada
and Ontario Area Code 807

only 1-800-268-5418

Quebec and Ontario, (except Area

Code 807) 1-800-268-3411

Metro Toronto Area 497-7117



Did you know?

Zane Grey (1872-1939), father of the western adventure novel, who wrote eighty-nine books that sold more than a hundred million copies and was the first person to ever become a millionaire solely by writing, **was first a dentist!!!**

He graduated from the University of Pennsylvania in 1896 and practiced for a short while in New York City before forsaking dentistry for his first love — writing!

Lasers in Dentistry

Le laser en médecine dentaire

1. Abrams, M.B. *Surgical lasers in dentistry*. Dentistry 1986, v. 6, no. 4, Dec. 1986, pp. 26-9.
2. Abt, E. *Removal of benign intraoral masses using the CO2 laser*. JADA, v. 115, no. 5, Nov 1987, pp. 729-31.
3. Ator, G.A. and others. *Thermal injury to the intratemporal facial nerve following CO2 laser application*. American Journal of Otolaryngology, v. 6, no. 6, Nov-Dec. 1985, pp. 437-42.
4. Bulcke, M.M.V. and others. *Location of the centers of resistance for anterior teeth during retraction using laser reflection technique*. American Journal of Orthodontics and Dentofacial Orthopedics, v. 91, no. 5, May 1987, pp. 375-84.
5. Dubin, N.L. *New therapy for temporomandibular joint syndrome and associated pain problems*. Journal — Connecticut State Dental Assoc. v. 60, no. 4, Oct. 1986, pp. 241-3.
6. Dupeyrat J. et Neyman, P. *Soft laser ou laser doux infrarouge dans la pratique quotidienne d'un service dentaire*. Le Chirurgien-Dentiste de France, no. 330, 20 mars 1986, pp. 37-46.
7. Fowler, B.O. and others. *Changes in heated and laser-irradiated human tooth enamel and their probable effects on solubility*. Calcified Tissue International, v. 38, no. 4, Apr. 1986, pp. 197-208.
8. Goldman, L. and others. *Current laser dentistry*. Lasers in Surgery and Medicine, v. 6, no. 6, 1986, pp. 559-62.
9. Horch, H.H. *CO2 laser surgery of oral premalignant lesions*. International Journal of Oral and Maxillofacial Surgery, v. 15, no. 1, Feb. 1986, pp. 19-24.
10. Huttab, F.N. *Intro fluoride uptake by lased and unlased ground human enamel*. ASDC Journal of Dentistry for Children, v. 54, no. 1, Jan-Feb. 1987, pp. 15-17.
11. Jones, G.M. and others. *A case of squamous cell carcinoma arising in an area treated with a carbon dioxide laser*. British Journal of Oral and Maxillofacial Surgery, v. 25, no. 1, Feb. 1987, pp. 57-60.
12. Laufer, G. and others. *Numerical analysis of the thermochemical tooth damage induced by laser radiation*. Journal of Biomechanical Engineering, v. 107, no. 3, Aug. 1985, pp. 234-9.
13. Lileborg, A. and others. *The laser reflection method. Computerized analysis of speckle pattern*. Swedish Dental Journal, v. 9, no. 5, 1985, pp. 213-8.
14. Makinsen, O.F. *Soft lasers and dentistry. Current note no. 63*. Australian Dental Journal, v. 31, no. 2, Apr. 1986, pp. 139.
15. Melcer, J. *Latest treatment in dentistry by means of the CO2 laser beam*. Lasers in Surgery and Medicine, v. 6, no. 4, 1986, pp. 396-8.
16. Nelson, D.G. and others. *Effect of pulsed low energy infrared laser irradiation on artificial caries-like lesion formation*. Caries Research, v. 20, no. 4, 1986, pp. 289-99.
17. Nelson, D.G. and others. *Laser irradiation of human dental enamel and dentine*. New Zealand Dental Journal, v. 86, no. 369, 1986, pp. 74-7.
18. Pick, R.M. and others. *The laser gingivectomy: The use of CO2 laser for the removal of phenytoin hyperplasia*. Journal of Periodontology, v. 56, no. 8, 1985, pp. 492-6.
19. Pradelle, P. *De l'utilisation des lasers Hélium Néon: réflexions à partir d'observations cliniques*. Le Chirurgien-dentiste de France, no. 296-297, 23-30 mai, 1985, pp. 37-39.
20. Southard, T.E. *Radiographic image storage via laser optical disk technology. A preliminary study*. Oral Surgery, Oral Medicine, Oral Pathology, v. 60, no. 4, Oct. 1985, pp. 436-9.

One copy of the above articles is available at no charge from the library to all CDA members. Non-members will be charged \$5.00. This bibliography was generated with the help of MEDLARS, a computerized information retrieval system for the Health Sciences field, which has been operational in the library since February 1982.

La bibliothèque de l'ADC offre gratuitement à ses membres et pour \$5.00 aux non membres une copie des articles au-dessus. Cette bibliographie a été préparée avec l'aide de MEDLARS, un système informatisé de recherches bibliographiques pour les sciences de la santé. Ajouté à la bibliothèque en février 1982.

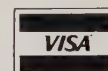


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Dental Awareness Program Update

DENTAL HEALTH MONTH '88

April is Dental Health Month — and this year's slogan is *What Keeps Bob Smiling?*

Who's Bob? He's the smiling face on all of this year's material. A friendly, next door kind of fellow, Bob will help humanize the idea of dental health. He visually expresses both the appeal of a healthy smile and the sense of personal satisfaction from having learned the way to achieve the best personal dental health.

Bob will also help to launch the Canadian Dental Association's "**5 Point Prevention Plan**". The plan conveys an active, educational message from the profession to the public. In effect, it will revitalize the conventional 'brush; floss; visit the dentist; eat well & avoid sweets' prescription. And equally important, it broadens the prevention focus to include other vital issues such as gum disease and smoking.

As a secondary message, we've created "Keep Smiling". Appearing on such materials as the buttons, stickers and cards, the slogan is intended to carry on the plan past its introduction in Dental Health Month.

Working Together

Each year the success of dental health month continues to grow. During April 1987, dentistry enjoyed widespread media and public attention, nationally and locally. We're looking forward to '88's events and anticipate the reaction to them to be the most exciting to date.

Ensuring Dental Health Month's success depends on involvement from dentistry at all levels — provincial associations, local dental societies, public health units, and each individual office. It's a time to work together to spread the CDA's Good For Life message.

Once again, to help you out, we've created a host of bright, colourful materials — posters, buttons, balloons and more — to give to your patients. So,



with a little bit of work and a fair bit of commitment, it's sure to be an exciting month.

Turn to the full colour brochure and order form in the middle of the Journal (CDA members can order, free of charge, a package containing one button, sticker and poster). Order a generous supply of materials for your patients. And let's make this the best Dental Health Month ever!

Council On Information Services A Successful Transition

This fall CDA bid a regretful goodbye to Doctors Yosh Kamachi, the council chairman, Terry Koltek, and Richard Howaniec who leave the *Council on Information Services* after many years of dedicated service. During their term, the *Canadian Dental Association* launched its first comprehensive education effort — the *Dental Awareness Program*.

Taking Dr. Kamachi's place as chair-

man is council member, Dr. Paul O'Brien. The new council members include Doctors' Greg Ritson-Bennett, Bill Hettenhausen, and Don Lauriente; and new executive liaison, Dr. Les Allen. From the success of the Council's first meeting in October, it is obvious that they are an inspired group who are going to work eagerly to further the *DAP's* development.

In the words of Paul O'Brien, "At the October meeting, I was extremely impressed with the new council members. I was very happy with the way everyone stepped into their new positions and I am confident that we will continue to work well together."

He continued to say that, "in the years to come I would like to see this council work hard at better educating the average dentist on the benefits of the *Dental Awareness Program*. I think that in the past we have been effective at getting the Program's message out to the public. Now I would like to see more dentists get actively involved."

The stage is set. A successful transition has been made. And now we can all be confident of great achievements from the new *Council on Information Services*.

A Reminder...

First Teeth materials are now available.

First Teeth is the latest addition to the *Dental Awareness Program*. It is the first integrated program targeted at parents of children up to nine years of age. Like the rest of the *Good For Life* Program, it is exciting, motivational, and practical.

If you have not received your order form or, if you wish to re-order, write to: Canadian Dental Association Order Section 1815 Alta Vista Drive Ottawa, Ontario K1G 3Y6.

Join us in our commitment to helping young children keep their teeth *Good For Life*. △

PERSPECTIVES IN TEMPOROMANDIBULAR DISORDERS

by Glenn T. Clark & William K. Solberg

Quintessence Publishing Co.
Chicago, Illinois
147 pages \$44.00

The tireless Clark and Solberg team has brought out the third in their series of research compilations on temporomandibular disorders and once more they have produced a work that can be recommended with only a few minor reservations.

The title signals that this is not intended to be a manual for diagnosis and treatment, but rather a series of position papers, and the position is that of the institution with which most of the authors are associated, namely the Temporomandibular and Facial Pain Clinic at UCLA.

Chapters by Clark and Solberg on new challenges in clinical management, research and teaching, on epidemiology and principles of treatment are especially useful in bringing some order and coherence to confusing topics; only data obtained from studies conducted according to accepted scientific principles are considered seriously, and unsupported accounts derived from clinical "impressions" are identified as such and given no more weight than they deserve.

Three competent chapters deal with diagnostic problems related to radiology and arthrography, including one on the still controversial topic of condylar position, and one chapter by Hansson concentrates on anatomical changes in both hard and soft tissues of the joint during remodelling and degeneration.

Two clinically-oriented chapters, one on neural blockade and one on surgery do not reach the standard of the others in that they lack a rigorous referenced research base; consequently their anecdotal approach appears weak beside the hard-nosed analytical attack of the remainder.

Two short but thought-provoking pieces provide the thin slices of bread around this meaty sandwich. Moffett once more attempts to remove our dental tunnel-vision by showing that anatomically the TM joint is not nearly as unusual as we like to believe, and a physiologist, Lou Goldberg, invents an analogy of the teeth and jaws as a food processor which provides an amusing insight into why traditionally-trained dentists will always be uncomfortable in treating TMJ patients.

The book will satisfy those with some experience in the field, and though a novice general practitioner would need to follow up a few references in order to fill in the background which is assumed by the authors, it would be a worthwhile exercise since the book removes much of the cant and mystique which has come to surround this subject, and it reiterates once more that dental methods alone are neither sufficient nor necessary to treat TM disorders.

And do you know what? The word "occlusion" doesn't even appear in the index! Δ

*This book was reviewed by
L.F. Greenwood, BSc, PhD, DDS
Assoc. Prof. Prosthodontics,
University of Toronto*

CANADIAN DENTAL LAW

Lorne E. Rozovsky

Butterworth & Co. (Canada) Ltd., 1987
Toronto and Vancouver
127 pages \$35.00

In the Preface to this superb treatise, Lorne Rozovsky QC articulates a frustration experienced by all teachers of dental law. Concerning his classes in the Faculty of Dentistry of Dalhousie University, wherein he had been forced to rely on texts dealing with the law and health disciplines generally, he experienced difficulty in persuading dental and dental hygiene students that the legal principles were the same whether the professional involved were a dentist, a physician, or a

physiotherapist. As there had been, quite literally, no book speaking directly to dental law in Canada, *Canadian Dental Law* effectively fills a long-standing void and provides a much needed resource.

Rozovsky has written extensively for the literature of dentistry. And different from many authors of legal articles and books, he has the capacity to express what might otherwise be difficult-to-grasp legal principles in language which presents no impediment to understanding by the legal laity.

Canadian Dental Law, in its fifteen chapters, covers almost the entire spectrum of legal topics of interest and concern to dental and allied practitioners. The chapters on Standards of Care and Negligence and Consent to Treatment provide information absolutely imperative for all practitioners to possess. The content of a comprehensive chapter on Dental Records and one on How to Avoid Dental Malpractice, if understood and conscientiously observed, would almost eliminate legal problems arising through the provision of diagnostic and treatment services.

But the treatise goes well beyond those important considerations to address licensure and registration, hospital staff privileges, employer-employee relations, responsibility for premises, drugs, discipline, dental service insurance, and the business of dentistry. There is a brief legislative survey of the provinces and territories concerning the interdisciplinary relationships between and among dentists and allied dental health workers. Chapters on some legal considerations bearing on forensic dentistry and fluoridation provide much information of value to the interested dentist.

There are some topics not addressed which, one may hope, will find themselves in a future second edition. The book is silent on the matter of statutes of limitation. And given the current scope of Canadian case law which has so extended the time periods during which a complainant/patient can legally commence an action, the profession could benefit from Rozovsky's insightful observations on

this topic. The matter of whether a dentist who has allegedly not adhered to an appropriate standard of care may be sued in either or both tort and contract and what differences there are, if any, could have been usefully pursued. Given the provision now appearing in almost all associateship agreements for a departing associate not to practise within a stipulated distance for a stated period of time, a commentary on restrictive covenants would have been a helpful addition. Rozovsky is forthright in his view concerning the ownership of records (the dentist who owns the practice is the owner) but whether or not departing dentists can be prevented from contacting the patients they have treated to advise them of their new locations could have been addressed.

In a practitioner's own enlightened self interest and on behalf of all dentists for whom collective liability insurance premiums are a rapidly increasing annual expenditure, an appreciative understanding of the content of *Canadian Dental Law* would contribute significantly to the prevention of litigation — an experience for the one who is subjected to it which is emotionally traumatic and costly in lost time and diminished effectiveness. If this reviewer had the authority or the resources he would assure that a copy of *Canadian Dental Law* found its way to every dental practice in the country. The book is just that valuable. Δ

*This book was reviewed by
Dr. Wesley J. Dunn, Professor
Division of Community Dentistry
The University of Western Ontario
London, Ontario*

ORAL HEALTH AND AGING

Editor: Ames F. Tryon

*PSG Publishing Co. Inc
Littleton, Massachusetts
467 pages, illustrations*

Today, media attention increasingly focuses on health problems facing our burgeoning elderly population. Gradually, dental literature is beginning to reflect this general concern. This recent publication in the field of geriatric dentistry provides a welcome addition to this sparsely covered topic. Edited by Ames Tryon, Chairman of Community and Oral Health, University of Mississippi School of Dentistry, this multi-authored volume consists of eighteen chapters related to dental health in the elderly.

The book is divided into three major sections. Each of the six chapters in section one, covers a single aspect of a fundamental health issue relevant to geriatric dental care. The first chapter on demographics, authored by the editor, provides compelling evidence of the socioeconomic impact this segment of our society will assume in the very near future. The five remaining chapters cover basic biology, psychology, therapeutics, general health concerns, and communicative disorders related to the elderly dental patient. Amply described by contributors expert in their respective disciplines, these chapters present a collective source of useful health information about the aged, seldom found in a single publication.

The second section of nine chapters, deals more specifically with clinical dental problems of the elderly. Nutrition, oral lesions, oral hygiene, caries, periodontal disease, prosthodontic, surgical, and endodontic therapies are discussed by separate contributors. These topics are mainly descriptive of common clinical conditions encountered in the aging mouth, and their impact on treatment planning. Some information regarding specific dental therapeutics is presented, for example, the chapter on prosthodontics. The editor intentionally chose to avoid the cook book approach to the treatment of specific geriatric dental conditions, in order to provide a guide to the profession interested in helping the elderly maintain their oral health. I believe, however, that a chapter on restoration and repair of root caries would benefit this volume. This information is not well covered in contemporary operative dentistry texts, and its addition to this publication would, in my opinion, make it more practical for the general practice.

The last section consisting of three chapters, presents a scholarly review of financial and organizational models of dental health care in the United States, Great Britain, and Norway. Professionals involved in a community dental health care setting, may find this section of interest, otherwise this information will have limited appeal to the general dentist.

All chapters in this book are supported by a wealth of contemporary literature citations. Numerous graphs and tables add considerably to the reader's appreciation of the text. Regrettably, the quality of the black and white photographs is poor, and in many cases they are redundant to the narrative. As with most books written by

many contributors, some overlap in the presentations occurs. In this volume, repetition is minimal, and often serves to reinforce the reader's comprehension.

The subject of geriatric dentistry is a recent newcomer to academia, with most courses in this subject having hastily been added to the North American dental school curricula in the past ten years. For dentists and dental students alike, I recommend this text as one guaranteed to provide guidance and insight to the oral health care of the growing number of geriatric patients in our community. Δ

*This book was reviewed by:
David Charles, BSc, DDS, MS
Assistant Professor,
Division of Removable Prosthodontics
University of Western Ontario,
London, Ont.*

PRACTICAL DENTAL MANAGEMENT: PATIENTS AND PRACTICE

By: John H. Manhold, MA, DMD,
Cecilia Black, RDH, BS, MA

*Ishiyaku Euro America Inc.
Publishers.
184 pages*

This is the sort of book that one must read with great attention to detail. Detail is what you will find page after page. There are no charts, diagrams, drawings or any visual aids at all. The book itself reminds the reviewer of some of the heavy psychology books studied in dental school.

Indeed the book is not geared to the kind of practice management of which we have such a plethora these days, but to such topics as "the basis of neurosis", "handling characteristic problems of the adult patient", and "recognition and management of the overly neurotic patient". The entire 114 pages are devoted to these and related topics in parts one and two of the book. Part three deals with office practice management and gets into the basis of the practice establishment, employer, employee relations and finally practice maintenance. The last aspect, chapter 12, has some very useful ways to analyze your practice. The authors cite overhead figures as 45 per cent to 55 per cent "with a somewhat higher figure during the first year due to the limited amount of gross revenue generated". This seems a little low upon discussion with most dentists the reviewer talked to in the Montreal area.

As always, these types of proclamations must be viewed as a guide only, not as a definite figure.

In the preface, the authors state that the sole practitioner will almost be in complete demise by the end of the decade. Although the book was published in 1984 this type of prediction seems completely out of line with even today's marketplace eq: capitation, P.P.O.'s and the store front office etc. . . . Avrom King predicted that only 20 per cent of all dentists will be in fee for service practice by the end of the century, so the authors seem unduly pessimistic for 1984.

As for the problems the practitioner faces in such areas as psychosocial disciplines in a broad range of business affairs, this book does provide in great detail, a useful background of psychology.

If dental students had the time, the book's first two parts would be excellent. Part three is most applicable to all types of fee for service practices. Δ

*This book was reviewed by
Andrew Toeman, DDS, FAGD,
Chairman, Council of Health Care, CDA,
Practice Administration, McGill University,
Faculty of Dentistry
Lecturer & Course Coordinator.*

A HANDBOOK FOR DENTAL HYGIENISTS

By: W.J.N. Collins
J.O. Forrest
T.F. Walsh

In this second edition, the authors have added a section on oral hygiene indices, dental abnormalities, an update on plaque, periodontal disease and preventive techniques. There is a total of twenty chapters organized in a pattern that presents the reader with a general background of the basic biological sciences followed by a focus on dentally related topics. Then dental disease entities and abnormalities are presented with oral medicine and pharmacology following. The last five chapters discuss patient care and prevention. There is an introduction to the history and practice of dental hygiene in the United Kingdom including the legal limitations of practice and a listing of examination requirements. This text is a very useful adjunct to studying for those examinations. It is very concise in the way that it presents subject matter that parallels the dental hygiene curricu-

lum in the United Kingdom.

The Handbook's use as a course text or a reference for dental hygienists in North America is limited. Firstly, the procedures performed by the dental hygienist in Canada and the United States are greater in number and more varied requiring more in-depth background information than is presented in this text. Secondly, it presents some detailed content that is contrary to North American concepts. For example, in the chapter on "Microbiology and Immunity" the authors state that most spores can be killed in three minutes by autoclaving. In our country twenty minutes minimum is more commonly recommended. In the chapter on "Oral Medicine and Pharmacology" the administration of fluoride tablets during pregnancy is recommended for decreasing caries susceptibility in deciduous teeth. Due to the work of Driscoll and Thylstrup in 1981, and others, we accept the concept that "there is no direct evidence to show that prenatal fluoride intake will influence the dental caries rate in children. Thirdly, the authors have used terms that are probably well known among anyone from the United Kingdom, but which are obscure to the uninitiated.

On the positive side, content and strategies for managing questions concerning caries, periodontal disease and prevention are insightful, based on sound evidence and are presented in a manner that is easy to understand and to interpret to the lay public. The authors have also successfully integrated, in a number of instances, material from the earlier "theoretical" chapters into the chapters on periodontal disease and patient care. For example, they discuss the immune system and its relevance to the periodontal disease process thus creating a sense of relevance for the "theory" chapters.

It is understandable to this reviewer that this text would be very useful for dental hygienists in the United Kingdom due to the organization of the subject matter, the integration of material, the clarity of the graphics, its size and conciseness. However, its use appears to be limited in the United States and Canada due to the provincial use of terms, contrary concepts and the broader service provided by dental hygienists in our dental care systems. Δ

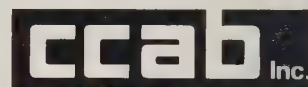
*This book was reviewed by
Joan T. Conklin, Assoc. Prof.
Faculty of Dentistry
University of Alberta*

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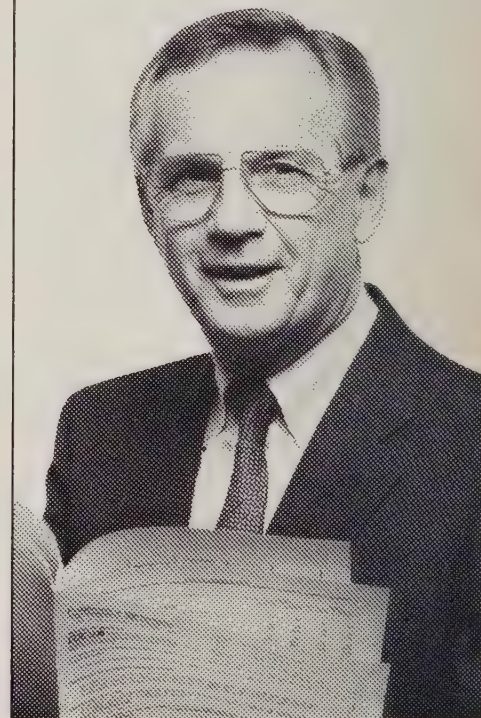
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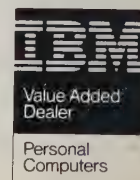
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References: **1.** LAMSTER, I., et al.: Clin. Prev. Dent., 6:12 (1983). **2.** MENAKER, L. et al.: Ala. J. Med. Sci., 16:71 (1979). **3.** ROSS, N.M., et al.: Warner-Lambert research report #955-0875 (1976). **4.** YANKELL, S.L., et al.: Warner-Lambert research report #955-0893 (1976).

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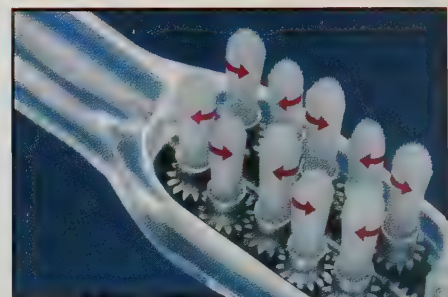
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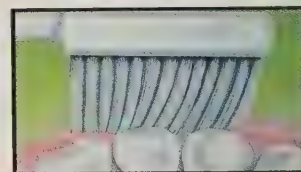
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LASERS IN DENTISTRY

“Star Wars”

Dreaming or a Future Reality?

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ABSTRACT

The authors' review of the literature, as well as their own research, indicates that lasers may improve preventive and therapeutic capabilities in dentistry. The areas of preventive dentistry, endodontics, restorative dentistry, surgical procedures, soft tissue biostimulation and management of chronic pain are all potential areas for laser applications. While some research in these areas has been reported, more extensive investigation is needed before practical application of lasers can be made in dental practice.

The authors have collaborated on the development of a dental laser system which permits effective intraoral useage.

Of all the “high-tech” developments in current vogue, the laser probably fascinates more people than most others. A beam of light which, in its various forms, can carry information, weld metals, reattach a detached retina, remove tumors, function as a potent weapon, fuse tooth structure, provide a “light show” or many hundreds of other functions, the laser is a phenomenal concept. When first developed in the 1960's, one could never have guessed at the breadth of its applications. It has literally been a scientific breakthrough looking for, and finding, multitudinous uses,

rather than a development in response to a specific need. The growth in its numbers of applications shows no signs of abating.

The profession of dentistry progresses through its research and would stagnate without it. We would be remiss in not investigating whether the use of lasers in dentistry could improve our preventive and therapeutic capabilities, and thus find a practical place in the practice of dentistry. The authors' review of the literature, and their own research, have led them to believe that lasers will have a vitally important place in dentistry in the relatively near future. This article will consider some of the potential uses for lasers in dentistry and briefly discuss the rationale for such applications.

Preventive Dentistry

The literature indicates that the enamel of teeth can be lased at energy levels which will microscopically, but not macroscopically, alter the enamel surface such that it is less susceptible to dental caries attack¹⁻⁷. Further, our research has indicated that both enamel and hydroxyapatite particles can be fused by CO₂ laser energy at very short exposure times⁸⁻¹¹. The possibility of obliterating deep tissues in occlusal surfaces with such laser-fused materials is a distinct possibility. Some work has already been done in this area¹².

It would appear that lasers may offer the possibility of preventive therapy which does not depend on acid-etch resin sealants.

Endodontics

Much of our own laser research has been in the discipline of endodontics. This research has involved laser effects on canal wall dentin, apical plugging materials and intracanal microbes. Our earliest work showed that the dentin of the root canal could be fused by short exposures of either ND-YAG or CO₂ laser energy, and that the fused dentin would recrystallize into a “glazed” non-porous surface^{13,14}. This property shows promise as a method for reducing dentinal permeability and thus leakage following canal obturation.

Further research indicated that apical plugging materials could be condensed into root canals and intracanal lased to fuse the plugging material particles^{8-11,15}. It was shown that enamel particles, especially, could be fused into a continuous, non-porous surface which would allow very little apical leakage (**Fig. 1**). This can be accomplished using exposure parameters (power, focal spot size and exposure time) which will probably result in little, if any, temperature rise at the periodontal ligament. Lasers may eventually thus serve as an important adjunct in attaining highly effective apical sealing.

The technique of fusing an apical plug to achieve sealing may also be very applicable to surgical retrofilling procedures. It is conceivable that both better biocompatibility and a more effective apical seal may be attained than is possible with current methods.

Another area of our laser research in endodontics involves the application of intracanal laser energy to sterilize contaminated root canals. This research indicated that large numbers of microbes can be killed within the root canal by CO₂ laser at exposure levels which will likely be biologically acceptable¹⁶. In many canals complete sterilization was accomplished in our preliminary studies. Our current research is investigating whether significant thermal changes occur at various points in the area of the laser target sites.

The endodontic literature has shown that root canal instrumentation does not completely eliminate pulpal tissues from the root canal system. The laser may provide an efficient adjunct to traditional canal instrumentation for this purpose since in the process of fusing dentin, any

organic tissue in the area is first volatilized. This more complete removal of pulpal tissues should result in less substrate for bacterial growth.

In addition to canal wall "glazing", apical plug fusion, microbiologic control and pulpal tissue debridement, the laser may prove useful in repairing incomplete vertical fractures. By first surgically exposing such a fracture, access may permit laser fusion of the fracture line and periodontal healing of the area. However, it may also be that even if proper fusion repair can be achieved, the periodontal tissues may not reattach to the thermally altered tooth structure. *In vivo* research will be necessary to determine this.

Fixed Prosthodontics and Operative Dentistry

Research has shown that irradiating enamel with laser energy can microscopically smooth the surface compared with unirradiated enamel^{3,17}. We are currently investigating whether CO₂ laser fusion of enamel along the prepared margins of crowns and operative cavity preparations can be practically utilized to achieve a

smoother surface for casting fit and for adaptation of direct filling materials, e.g. amalgam and composite resins. Given that the weak point of most restorations is the marginal area, improvement of this interface could potentially reduce restoration failure. As mentioned earlier, properly lased enamel has been shown to be more caries resistant than unlased enamel. If marginal lasing proves practical, both improved marginal interfaces and increased caries resistance may be achievable. Our initial results on marginal lasing have been encouraging, and we are currently developing appropriate exposure parameters and techniques for such laser applications.

More than a few researchers have postulated that it may even be possible to place ceramic restorations whose margins could be laser fused with the cavity preparation margins. While this idea is intriguing, problems such as laser access to margins and relative dimensional changes due to differing thermal properties must be considered. However, it is likely that such problems will eventually be surmountable and this idea cannot be ignored.

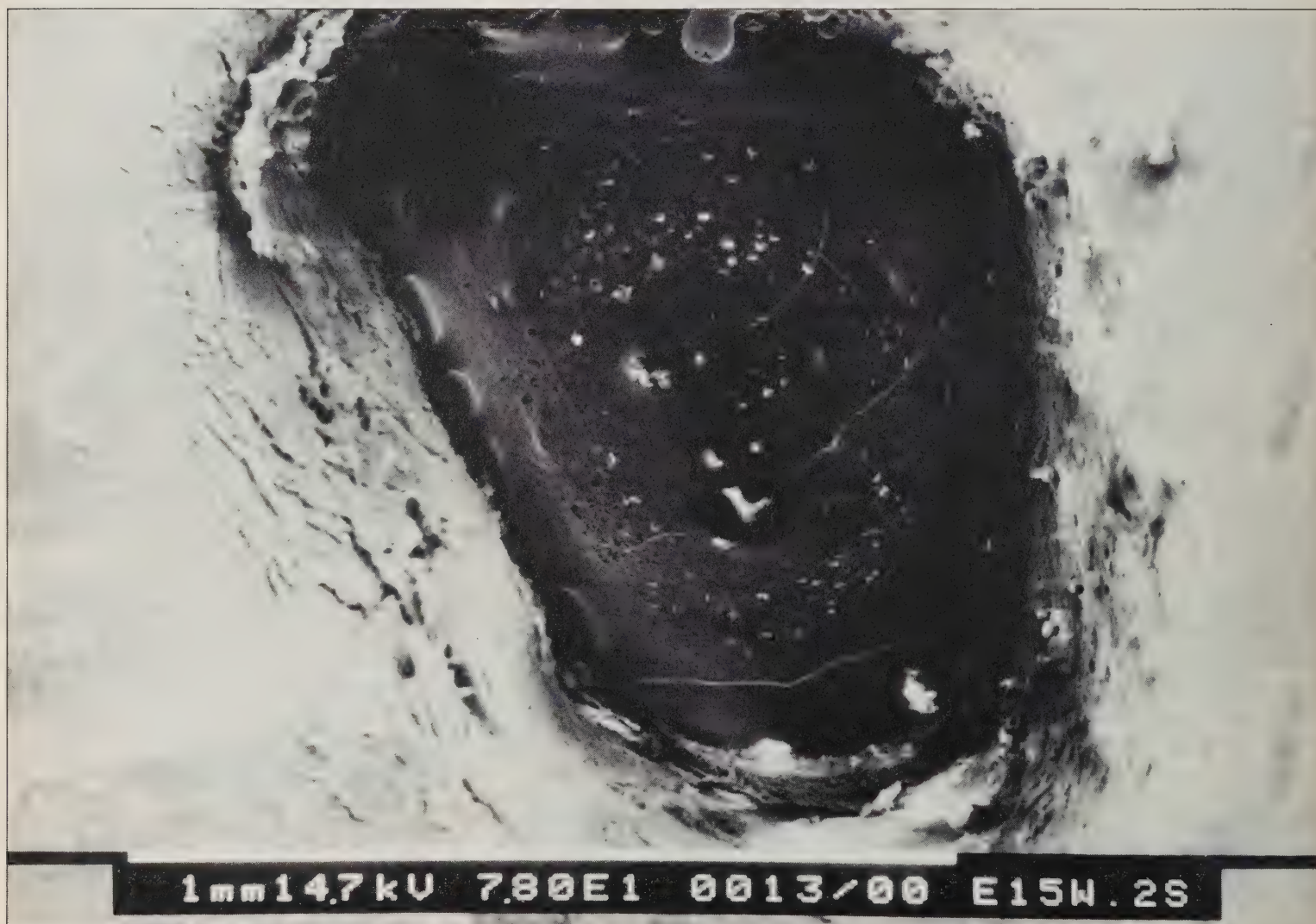


Figure 1 Laser fused enamel particle plug in root canal.

The effects of laser energy on crown preparation and operative cavity margins, as well as the fusion of ceramic materials with enamel, are just a few of the potential applications of lasers in restorative dentistry. Laser welding, removal of carious tooth structure and a variety of other dental material effects by laser energy may make the discipline of restorative dentistry the most "fertile field" for dental applications of lasers.

Oral Surgical Procedures

Lasers are currently available for use as surgical scalpels and are used extensively in medicine. The main purported advantage of laser scalpels over traditional scalpel methods is better hemostasis¹⁸. The depth of penetration in surgical procedures can be controlled by both the exposure parameters utilized and the laser wave length selected. The dental disciplines of oral surgery, endodontics and periodontics may all be potential areas where the laser surgery is both feasible and preferable.

Soft Tissue and Analgesic Effects

Recent scientific literature suggests that low level laser energy, i.e. in the one-to-ten milliwatt range, may have significant biostimulation properties¹⁹. The biostimulation which has been reported has involved claims of promotion or acceleration of wound healing to stimulation of human fibroblast proliferation²⁰⁻²³. While the literature isn't convincing that any practical application of lasers can be made at this time for biostimulation, this area deserves more research effort.

In addition to biostimulation, it has also been suggested that low level laser radiation may be effective in managing chronic pain²⁴⁻³⁰. This treatment modality may have application for pain such as is observed in myofascial pain dysfunction syndrome. Again, the current scientific evidence is not substantial, but further oral research in this area is certainly indicated.

A Dental Laser System

Numerous potential applications have been identified for lasers in dental practice. However, it should be noted that for a great many of these applications, the currently available commercial lasers built for medical purposes will be of little use.

The most useful laser for treatment of dental hard tissue is the CO₂ laser. The wavelength of this laser is such that it is extremely well absorbed on the target

surface. This means that tissue, such as enamel or dentin, can be altered as desired without thermally affecting underlying tissues. Unfortunately, because of this high surface energy absorption phenomenon, the CO₂ laser beam cannot currently be transmitted through a fiber-optic system but must rather be transmitted through an articulated-arm/mirror system. The medical fiberoptic lasers, such as the Nd-YAG laser, which would be convenient to use in the mouth, possess wavelengths which can allow much of the laser energy to pass through the hard or soft tissue surfaces to be absorbed in underlying tissues. This may result in thermal damage to deeper tissues, i.e. the periodontal ligament, which we do not want affected.

The current medical laser systems are bulky, can easily develop misalignment of the waveguide system, and do not possess a convenient contra-angle beam delivery for dentistry. They would not be

useable for many of the dental laser applications discussed in this paper because of their inability to deliver the beam where desired.

The authors have collaborated on delineating the requirements of a dedicated dental laser system which will circumvent these problems. Once these requirements were identified, one of the authors (Dr. J. Tulip) and his team of engineers designed a dental laser system which should be extremely useful for all the applications discussed here (Fig. 2). It incorporates a compact design, an articulated-arm waveguide system which is easy to keep in alignment, both straight and contra-angle delivery of the beam and both CO₂ and Helium-neon laser sources. This laser will thus be applicable to high energy hard-tissue treatment, soft-tissue incision, and low energy soft-tissue biostimulation treatment. The contra-angle delivery mode will allow placement of the laser beam through the

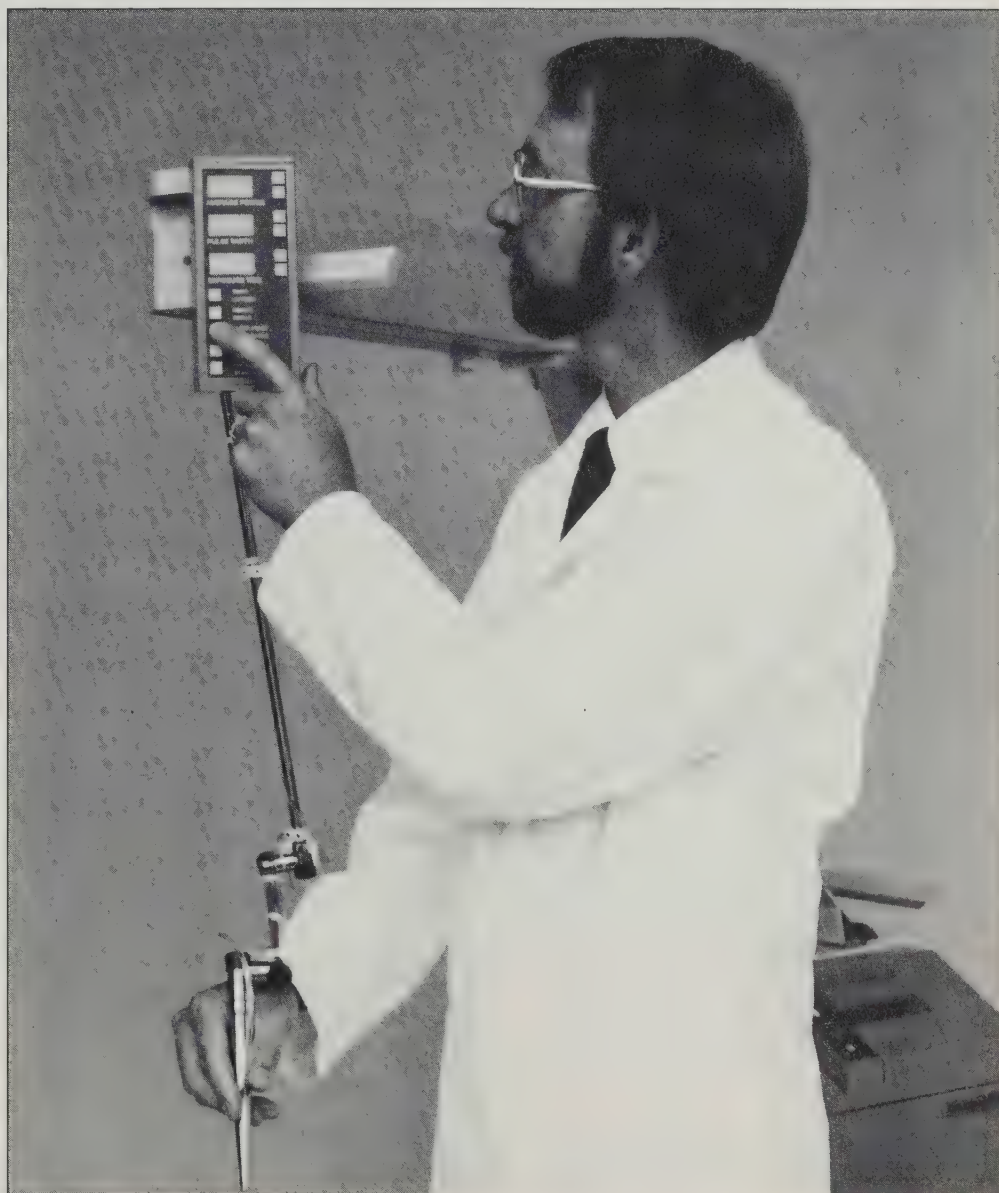


Figure 2 New CO₂ dental laser system.

lumen of a stainless steel needle which will reduce the need for a fiberoptic delivery system. In short, this system should allow the dentist to place the beam to almost any location in the mouth, and it will easily fit into a dental operatory.

Summary

The scientific literature, as well as our current research, indicates that lasers have many potential beneficial applications in dentistry. These will probably be in the areas of preventive dentistry, endodontics, restorative dentistry, surgical procedures, soft tissue biostimulation and analgesia. Research in these areas is currently underway, but would benefit from expanded efforts.

In addition, the authors have collaborated on the design of a CO₂ dental laser system which eliminates many of the problems associated with medical CO₂ surgical lasers. Continued development and refining of this system is ongoing. Δ

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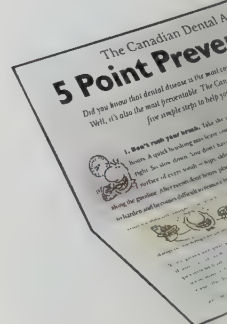
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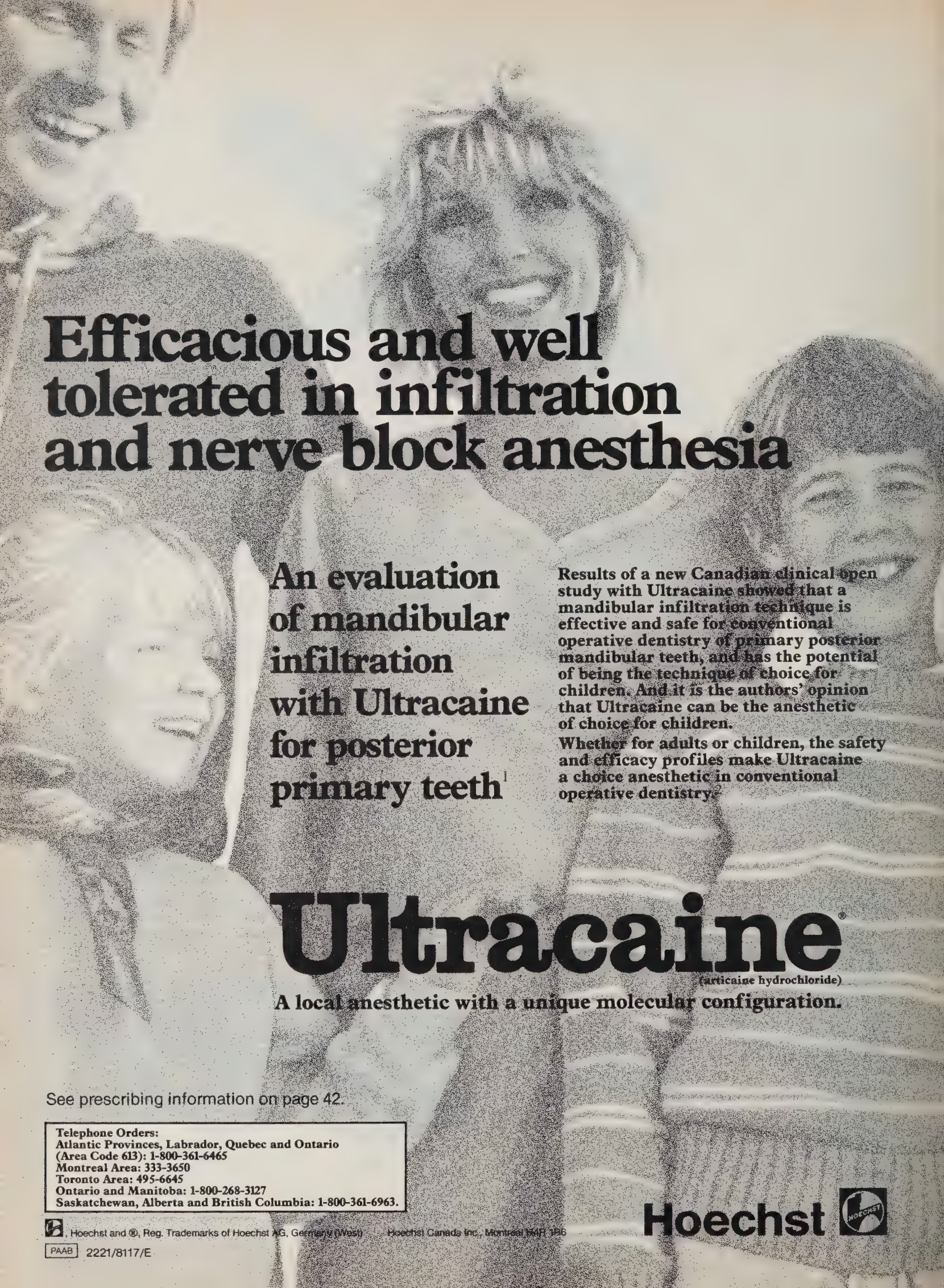
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ABSTRACT

The peripheral ameloblastoma is regarded as a relatively uncommon odontogenic tumour possessing the histologic features of its intraosseous counterpart, but arising within the soft tissues overlying the alveolar bone. This case report describes a peripheral ameloblastoma which presented clinically as an epulis on the lingual mandibular gingiva of a 46-year-old male. While the term "epulis" usually encompasses a group of more commonly observed gingival lesions, the differential diagnosis should incorporate less commonly observed lesions which may initially present as a solitary growth on the gingiva.

SOMMAIRE

On considère l'améloblastome comme une tumeur odontogène relativement rare possédant les caractéristiques histologiques de sa contrepartie intra-osseuse, mais se produisant dans les tissus mous recouvrant l'os alvéolaire.

Voici un cas d'améloblastome qui se présentait en clinique comme une épulis sur la gencive mandibulaire linguale d'un homme de 46 ans. Bien que le mot épulis désigne ordinairement un groupe de lésions gingivales qu'on rencontre plus fréquemment, le diagnostic différentiel doit comprendre des lésions plus rares qui peuvent se présenter d'abord comme une tumeur isolée sur la gencive.

The peripheral ameloblastoma is a relatively rare odontogenic neoplasm arising within the soft tissues overlying the alveolar bone. Although many of the early reported cases were diagnosed as "basal cell carcinoma of the gingiva",^{1,2} sporadic case reports of peripheral ameloblastoma have appeared in the literature³⁻⁵ and, in particular, a paper by Wesley, Borninski and Mintz⁶ provides a concise summary of several well documented cases, as well as providing an additional case of their own. Gardner,² in his review of the literature in 1977, concluded that the peripheral ameloblastoma and basal cell carcinoma of the gingiva actually represent the same lesion.

Histogenetically, this particular lesion is considered to arise either from surface epithelium or from remnants of dental lamina present within the gingival tissues.

Clinically, the tumour presents as a painless nodule on the gingiva, ranging in size from 0.3 to two centimetres. The lesion is more often observed in the mandible than the maxilla and shows a slight predilection for occurrence in males. Peripheral ameloblastomas have been reported over a wide age range; however, the majority of documented cases have arisen in the fourth to sixth decades.

Radiographically, there is generally no underlying bony involvement, although superficial erosion or cupping of bone has been described in a few instances and interpreted as a pressure phenomenon due to growth of the overlying tumour.

Microscopically, the neoplastic tissue from the lesion exhibits the same basic patterns as are seen in the intraosseous ameloblastoma. Numerous nests and islands of odontogenic epithelium exhibit a characteristic peripheral cuboidal to columnar cell layer with polarized nuclei and subnuclear vacuolization. These peripheral cells resemble ameloblasts and in turn enclose a central zone composed of a more loosely arranged tissue, resembling the stellate reticulum. In addition, a large majority of peripheral ameloblastomas have been reported as being acanthomatous whereby portions of the stellate reticulum have undergone squamous metaplasia, with evidence of keratin formation. The islands of tumour epithelium are situated against a background of a mature fibrous connective tissue stroma. The relationship of the tumour to the overlying epithelium may involve either focal areas of continuity or may show no evidence of surface continuity.

Gardner,⁷ and Gould and his associates⁵ have discussed some general criteria for differentiating the peripheral ameloblastoma from Baden's⁸ odontogenic gingival epithelial hamartoma and a peripheral odontogenic fibroma. These criteria were based on the relative increase in cellularity of the stroma, the presence of dentinoid and the greater abundance of unexceptional islands of odontogenic epithelium — all features more compatible with the latter two lesions.

In sharp contrast to the intraosseous ameloblastoma, treatment of a peripheral ameloblastoma requires a more conserva-

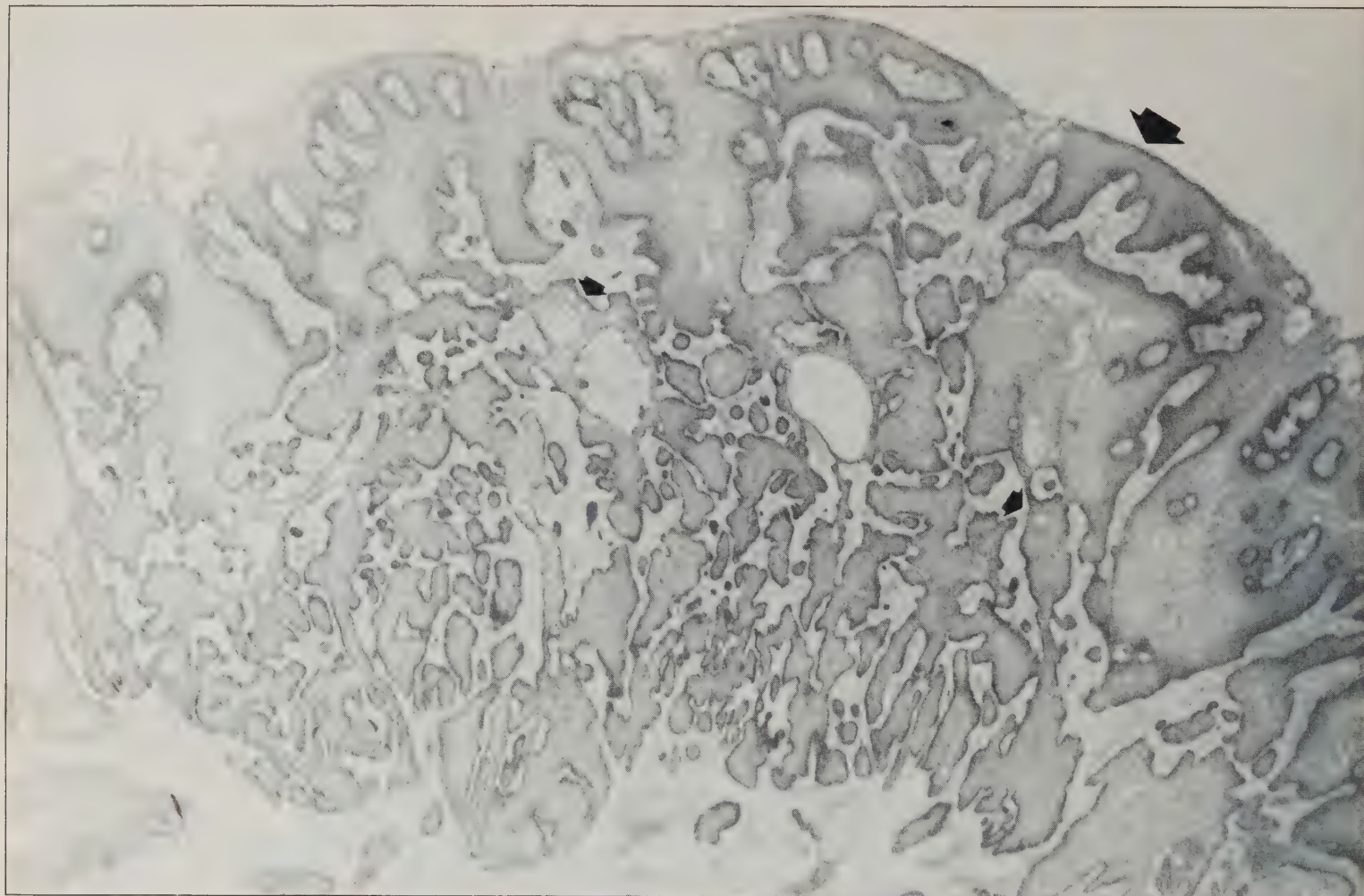


Fig. 2 Low-power photomicrograph illustrating continuity of neoplastic odontogenic epithelium (small arrows) with overlying mucosal epithelium (large arrow). (Hematoxylin and eosin).



Fig. 1 Radiograph showing the soft tissue outline of the lesion opposite the right cuspid-bicuspid area (arrowheads).

tive surgical management involving excision with a small margin of normal tissue. Adequate, routine re-evaluation of the surgical site is nonetheless important in these cases. It is generally believed that the peripheral ameloblastoma is a relatively innocuous lesion lacking the persistent invasiveness of its intraosseous counterpart and exhibiting little tendency to recur.

Case Report

The patient, a 46-year-old male, had complained of a slowly enlarging mass on the lingual aspect of the gingiva opposite the mandibular right cuspid-bicuspid region. The lesion had been increasing in size for the past 9-10 months and at clinical presentation appeared as a reddish mass with a somewhat spongy texture. Radiographically, there was no involvement of the underlying bone (**Fig. 1**). A 2×2 cm. mass was conservatively excised.

Microscopic examination revealed an extensive proliferation of nests and islands of odontogenic epithelium, many of which were in continuity with the overlying epithelium (**Fig. 2**). These clusters

of tumour cells exhibited a prominent peripheral cell layer with distinctly polarized nuclei and cytoplasmic subnuclear vacuolization (**Fig. 3**). In some areas, this peripheral cell layer enclosed a more typical appearing stellate reticulum-like tissue, while other zones revealed a more squamoid appearance with some evidence of keratin formation.

Discussion

This patient presented with an asymptomatic, solitary, tumour-like growth on the gingiva which clinically is defined as an epulis. The differential diagnosis of an epulis includes a variety of more clinically familiar reactive lesions such as:

1) pyogenic granuloma, 2) peripheral giant cell granuloma, 3) peripheral ossifying fibroma, and 4) focal fibrous hyperplasia (fibroma, fibroepithelial polyp). The clinical appearance of these lesions may often be suggestive (although not diagnostic) of the nature of the underlying pathology. Neoplasms presenting clinically as an epulis occur much less frequently but should be incorporated into the above differential diagnosis. These might include the following: 1) peripheral

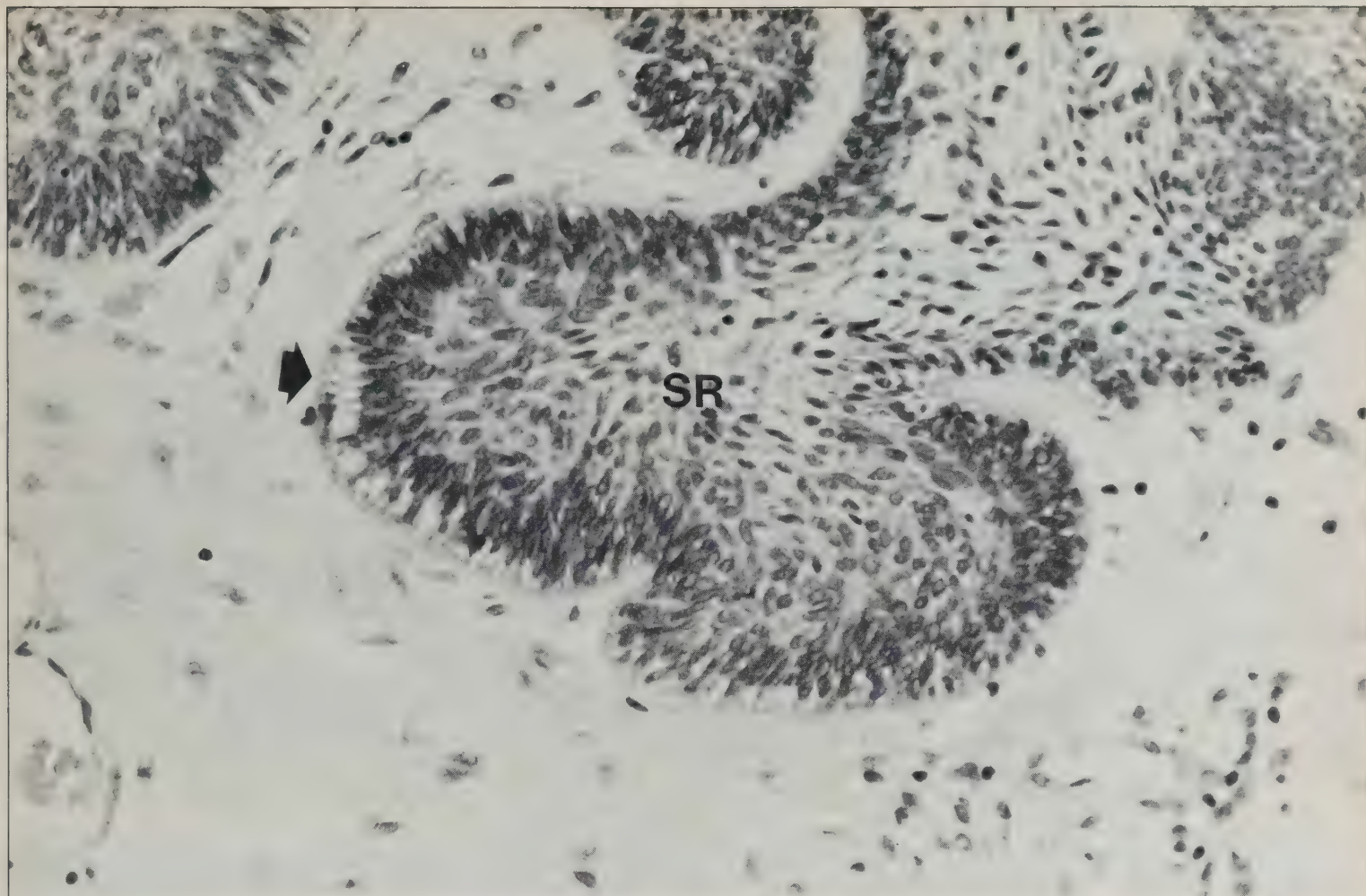


Fig. 3 High power photomicrograph illustrating distinct palisading of the basal cell layer with nuclear polarization and cytoplasmic vacuolization (arrow). This peripheral cell layer encloses typical stellate reticulum-like tissue (SR). (Hematoxylin and eosin).

odontogenic fibroma, 2) peripheral ameloblastoma, 3) peripheral calcifying odontogenic cyst (COC), 4) peripheral calcifying epithelial odontogenic tumour (CEOT), 5) peripheral adenomatoid odon-

TABLE I

Major differential diagnoses of an epulis

Reactive

1. pyogenic granuloma
2. peripheral giant cell granuloma
3. peripheral ossifying fibroma
4. focal fibrous hyperplasia (fibroma, fibroepithelial polyp)

Neoplastic

1. peripheral odontogenic fibroma
2. peripheral ameloblastoma
3. peripheral calcifying odontogenic cyst (Gorlin's cyst)
4. peripheral calcifying epithelial odontogenic tumour (Pindborg tumour)
5. peripheral adenomatoid odontogenic tumour (AOT)
6. neurofibroma/neurilemmoma
7. metastatic disease

togenic tumour (AOT), 6) neurofibroma, and 7) metastatic disease (**Table I**). The biologic behaviour of the peripheral ossifying fibroma necessitates careful postoperative observation for recurrence of the lesion. Because the incidence of the first five neoplasms is quite rare, information concerning their biologic behaviour is incomplete at the present time.

Only through a careful histologic examination of biopsied or excised lesions in combination with a thorough clinical history can a definitive diagnosis of an epulis be obtained. The dental practitioner may then more accurately assess the merits and prognosis of particular treatment protocols.

Summary

A case report of a peripheral ameloblastoma is presented and the differential diagnosis of an epulis is discussed. Δ

The authors wish to thank **Mr. Bruce McCaughey** for assistance in preparing the illustrative material, and **Ms. Laurieen Holst** for her secretarial assistance.

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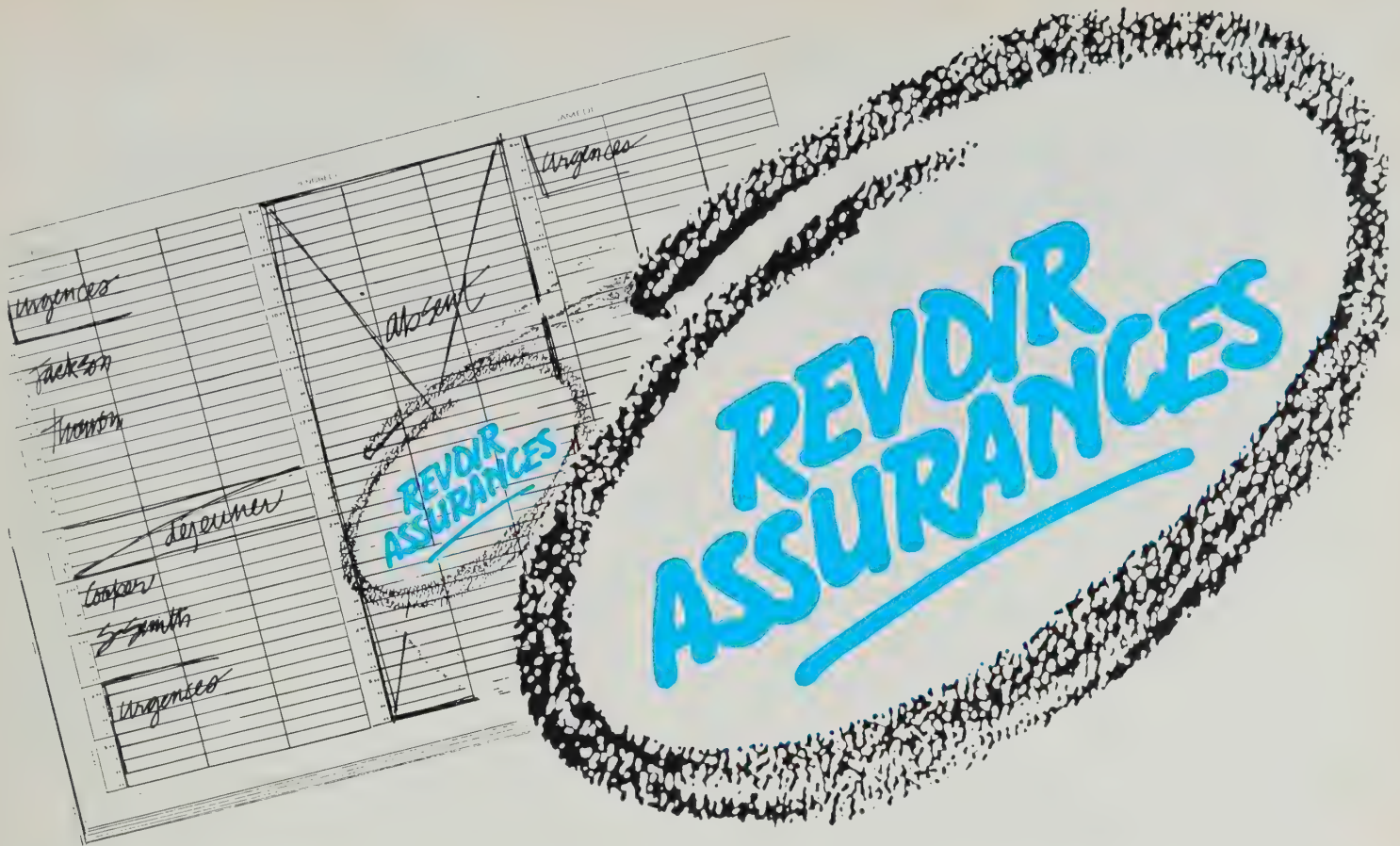
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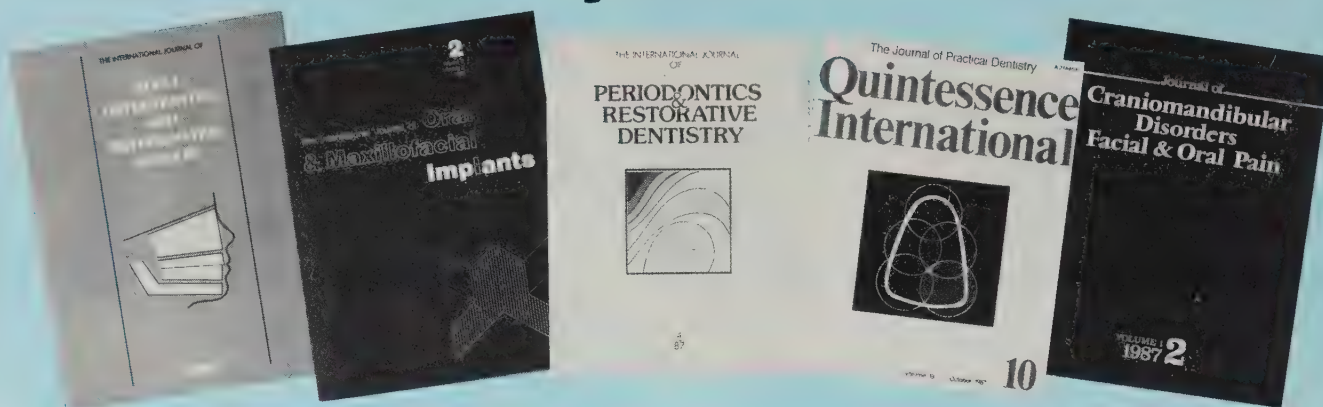
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LORAZEPAM SUBLINGUAL

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Deborah Battrum, DDS, MScD
Vancouver

INTRODUCTION

The aim of pharmacological adjuncts, when used to help the anxiety prone patient, is to produce a state of conscious sedation attained via depression of the central nervous system (CNS). This enables treatment to be carried out, yet maintains the protective reflexes normally obtunded with the use of general anesthesia.

While intravenous conscious sedation techniques remain the most predictable methods of providing the patient with relief, the problems associated with administration of intravenous drugs continue to inhibit most practitioners from using these techniques in their offices.

The following is a discussion of an alternative to intravenous sedation, where results have proven superior to previously used oral sedative techniques.

SOMMAIRE

Lorsqu'on utilise des produits pharmaceutiques pour calmer les patients anxieux, on cherche à les mettre dans un état de sédation consciente en provoquant une dépression du système nerveux central. Le dentiste peut alors effectuer le traite-

ment et les patients conservent les réflexes protecteurs que l'anesthésie générale aurait normalement endormis.

Bien que la sédation consciente par voie intraveineuse reste la méthode pour soulager les patients dont les résultats sont les plus prévisibles, la plupart des praticiens répugnent encore à y recourir à cause des problèmes associés à l'administration des drogues par voie intraveineuse.

Voici un article qui propose une autre méthode dont les résultats se sont révélés supérieurs à ceux des méthodes de sédation par voie buccale qu'on utilisait auparavant.

Short-acting vs. long-acting benzodiazepines

Diazepam has held a prominent position for many years as the sedative of choice but further research has led to the development of numerous competitors. Several guidelines have appeared for the indications and uses of drugs in the group. In a systematic review of the benzodiazepines, the British Medical Journal¹ suggests a distinction should be drawn between 'long-acting' (where plasma $T_{1/2}$ exceeds 10 hours), e.g., diazepam and chlordiazepoxide, and

'short-acting' agents (where plasma $T_{1/2}$ is less than 10 hours), e.g., triazolam, lorazepam and temazepam.

The short-acting plasma $T_{1/2}$ provides a specific benefit to the elderly and those with impaired renal and hepatic function, in that the rapid drug excretion and lack of active metabolite accumulation is of consequence in the 'short-acting' benzodiazepines such as lorazepam, which has no active metabolites.

Lorazepam was primarily introduced for the treatment of anxiety. In recent years, it has risen in popularity as an adjunct to general anesthesia and is considered to be about five times as potent as diazepam. The Wyeth Company presently markets the drug under the trade name Ativan, which comes in three forms – for oral, sublingual and intramuscular or intravenous administration.

When administered sublingually, the peak plasma concentration is claimed to be equivalent to that achieved via the intramuscular route and occurs in about one hour. Orally, it takes about one and a half hours to peak.² For lorazepam, the absorption intramuscularly is far more rapid and predictable than for diazepam and chlordiazepoxide. However, since the introduction of sublingual tablets, the availability of the intramuscular prepara-

tion would appear redundant, as lorazepam administered sublingually provides equivalent effects.

While peak plasma concentrations are not reached for an hour after sublingual administration, the onset of anti-anxiety effects occurs in 15-18 minutes. This is more practical for use in dentistry when compared with oral doses of diazepam or chlorthalidopoxide, which take up to one hour to produce the same effects.

The amnesic effects of lorazepam, especially at higher therapeutic doses, have demonstrated that patients fail to recall procedures with a greater incidence than with diazepam. This has been shown to be the case in about 20 per cent of patients treated with diazepam vs. 80-90 per cent of those treated with lorazepam.³ This additional lack of recall could be of considerable benefit if it could be confined to recall of the dental procedure alone. Gale, Galloon and Porter⁴ have demonstrated that lorazepam impairs retrieval of information, in contrast to diazepam which has been shown to affect recall by causing impairment of memory input on the consolidation process by affecting both recall and recognition equally. Although absorption by intramuscular and sublingual routes are similar, the amnesic effect has been more profound when lorazepam is administered sublingually. A suitable explanation for this phenomenon is unavailable.

Regarding plasma protein binding: while 85 per cent of the drug is bound, it does not appreciably displace most other plasma protein-bound drugs. Its principal metabolite, a glucuronide, has no demonstrable central or accumulation effect.

Drug interactions

Due to potentiation with narcotic analgesics, it is advisable to reduce drug doses when narcotics are used in conjunction with lorazepam. The only absolute contraindications for lorazepam are in combination with scopolamine, in patients with known hypersensitivity to other benzodiazepines, in patients with a primary depressive disorder or psychosis, and in those with myasthenia gravis.

Dose

As a practical approach to using an efficacious dose, the following is suggested: usually 0.5 mg/kg to a maximum of 4 mg one hour before the dental procedure, when administered sublingually. For the average 70 kg, healthy adult with acute anxiety, one could administer 1.0 mg p.o. the night before the appointment and 1-2 mg sublingually 15-30 minutes prior

to the appointment. Depending on the degree of sedation required, the dose can be adjusted from one appointment to the next. The practitioner is reminded of the amnesic and possible mental and motor impairment. Patients do not always display the visible signs of ptosis and slurred speech, which have become the hallmarks of diazepam sedation. Nevertheless, patients will be calm and sedated.

Patients should place the tablet under the tongue, and be instructed not to swallow for two minutes. The tablet will dissolve in about 30 seconds. The rich blood supply to the floor of the mouth and permeability of the mucous membranes of the area ensure rapid absorption and uptake of the drug.

Practitioners must be cognizant of the difference between the tablets for sublingual and oral use. The oral tablets will *not* provide the same results if held under the tongue. As with all modes of sedation, the practitioner must ensure the patient is accompanied if excessively sedated.

Conclusion

Sublingual lorazepam, when judiciously used, is a viable alternative to intravenous sedation in many anxiety-prone patients. Since a major goal of dental sedation is to minimize the long-term effects of the sedative, a benzodiazepine such as lorazepam can fulfill this goal since it has a short half-life and no active metabolites. Older patients and those with impaired renal and hepatic function will be sedated without the exaggerated effects produced by most other sedatives, even in recommended doses. Finally, the worry of obtunding the protective reflexes of a patient undergoing intravenous sedation is minimized when recommended doses of lorazepam are used sublingually. Δ

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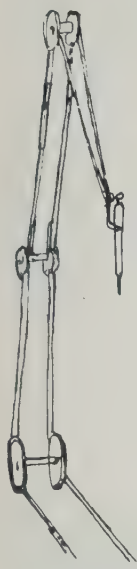
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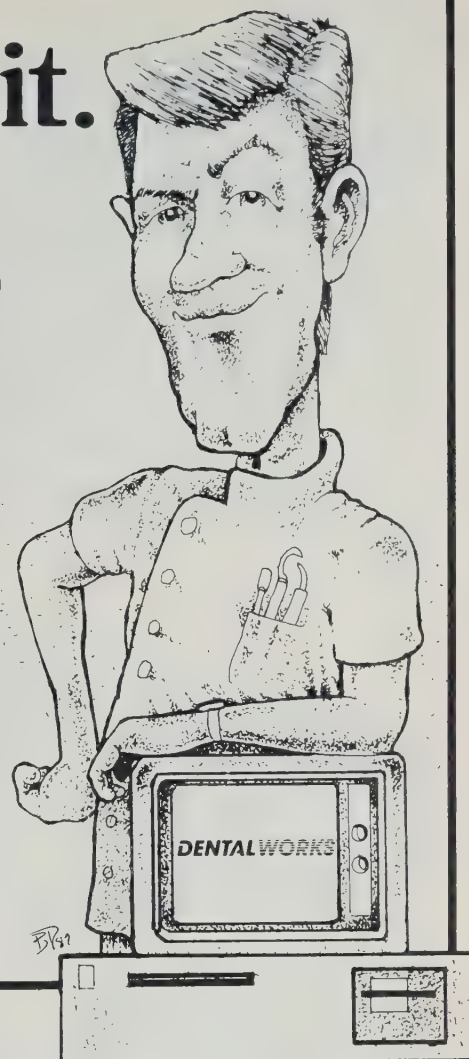


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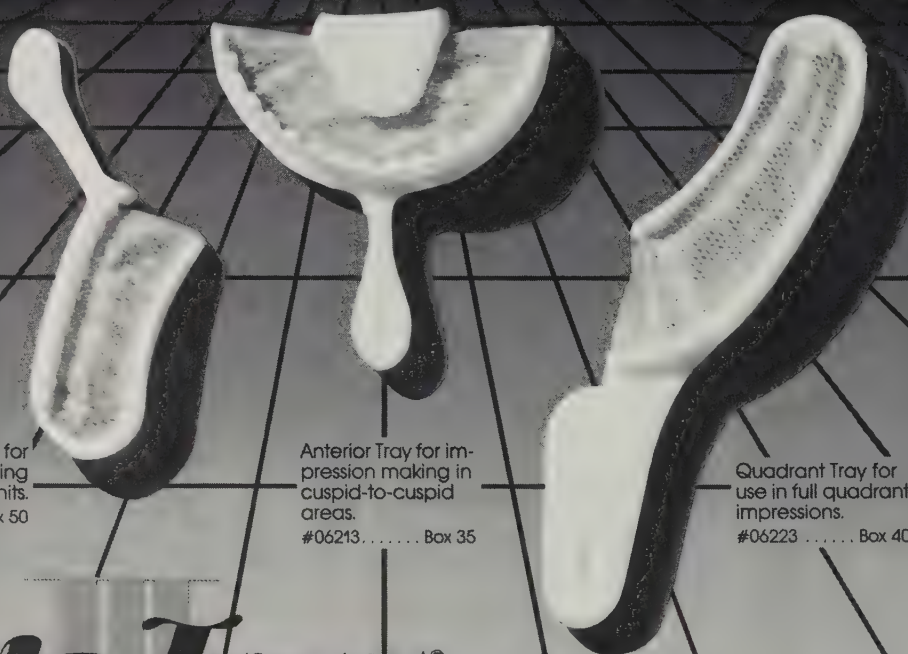
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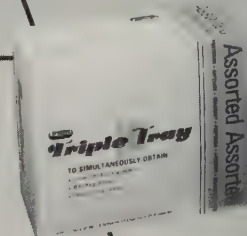
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Quelques données cliniques sur le syndrome TRICHO-DENTO-OSSEUX

Paul P. Carvellas

Le Dr P.P. Carvellas est étudiant avancé au certificat de pédodontie de l'Université de Montréal à l'hôpital Ste-Justine.

RÉSUMÉ

Une revue de littérature concernant le syndrome tricho-dento-osseux (TDO), une anomalie génétique très rare, est présentée, en détaillant les sous-groupes qui constituent la classification actuellement utilisée. Les signes cliniques et radiologiques, généraux et dentaires, sont décrits et illustrés par deux histoires de cas de frères atteints du syndrome.

SUMMARY

A review concerning the tricho-dento-osseous syndrome (TDO), a very rare genetical disorder, is presented with a special emphasis on the actual classification. The clinical and radiologic features of the syndrome are described and the main general and dental characteristics are described. Two case reports of brothers are illustrating the TDO syndrome.

Le syndrome tricho-dento-osseux (TDO) est une anomalie transmise de façon autosomale dominante et qui affecte principalement les os, les dents et les cheveux¹, et d'une manière égale l'homme et la femme². Ce syndrome est très rare et un nombre limité de cas ont été présentés dans la littérature.

Lichtenstein a été le premier à décrire le syndrome tricho-dento-osseux et à lui donner ce nom³. Mais Robinson avait déjà rapporté, en 1966, un cas d'hypoplasie héréditaire de l'émail associée à une structure caractéristique du cheveu sans implication osseuse⁴. Des cas

d'amélogénèse imparfaite avec taurodontisme ont été aussi observés mais sans aucune autre manifestation clinique ou radiologique⁵⁻⁶. D'autres auteurs ont publié après lui des cas semblables à celui publié par Lichtenstein⁷⁻⁹. Enfin, on a aussi décrit un nouveau type du syndrome TDO différent fortement du syndrome original¹⁰. En effet, l'observation de divergences dans les signes cliniques n'est pas rare et a permis à Shapiro d'élaborer une classification utilisée actuellement.

Ces variations pourraient être dues à l'expressivité différente d'un seul gène, ou à l'existence de plusieurs syndromes différents. Le syndrome tricho-dento-osseux se subdivise ainsi en TDO I, II et III¹. Chaque groupe présente aussi un nombre considérable de variantes¹¹.

Les manifestations cliniques

Les trois classes regroupent des caractéristiques communes².

Le patient atteint de TDO a les cheveux drus et serrés, et, dans 80 pour cent des cas, des sourcils bouclés qui peuvent devenir droits avec l'âge. Dans 30 pour cent des cas, l'os cortical de la base du crâne et des mastoïdes, est sclérosé, et la calcification des os longs est provisoirement modifiée. Ses dents primaires et permanentes sont de couleur brun-jaune et présentent une attrition généralisée. L'émail est mince et mesure $\frac{1}{4}$ à $\frac{1}{8}$ de l'épaisseur de l'émail normal. Il donne l'impression d'être immature. Dans 90 pour cent des cas, la chambre pulpaire est très large et les cornes s'étendent jusqu'à la jonction émail-dentine. On observe souvent des microexpositions à cet endroit, qui entraînent la mort pul-

paire et des abcès périapicaux.

Avec le syndrome TDO, on observe aussi une agénésie partielle, un taurodontisme au niveau des molaires et un retard d'éruption².

À côté de ces traits communs, il existe des différences qui permettent de distinguer les uns des autres les trois sous-classes du syndrome.

1. TDO (I) ou syndrome de Robinson-Miller-Worth

On retrouve dans cette classe les premiers cas publiés dans la littérature^{3,4,5,7}. Les cheveux sont épais et durs avec des petites boucles. Ils peuvent devenir droits pendant l'enfance et l'adulte peut devenir chauve. Les ongles sont plats, épais, striés, ont tendance à se dédoubler et à se briser. Occasionnellement, on observe une bosse frontale.

Les cas décrits par Lichtenstein sont des dolicocephales avec la mandibule carrée. Ces patients ont l'intelligence intacte, entendent normalement, n'ont pas de lésion cutanée ni de tendance à présenter des fractures³.

À l'examen radiographique, la plupart des cas présentent une légère augmentation de la densité des os, due à un épaississement de la structure lamellaire de l'os cortical⁹. La diploë paraît normale¹. Dans 50 pour cent des cas une radiographie révèle une ostéosclérose de la colonne vertébrale, des membres et du crâne¹². Lorsqu'elle n'est pas observable, c'est probablement qu'il s'agit d'un cas avec une expressivité de gène différente¹. Au niveau des maxillaires, on observe une augmentation de l'angle de la mandibule et un raccourcissement de la branche montante⁷.

L'amélogénèse imparfaite accompagnée de taurodontisme qui atteint la dentition^{4,5,6,13}, se caractérise par des dents de petite taille dont l'émail est défectueux, avec des anomalies de ses bâtonnets et une hypocalcification. Des hypoplasies avec des dépressions et des puits très pauvres en ions calcium et phosphore puisqu'ils en contiennent de 75 pour cent à 90 pour cent que moins que l'émail normal adjacent, sont observés régulièrement. Cet émail hypoplasé se carie facilement. Les cornes pulpaire sont très développées dans ce type de dents taurodontes et la pulpe se gangrène rapidement. Des lésions périapicales se développent, associées avec une ostéite condensante⁹.

Une attrition rapide détruit les couronnes avec les points de contact¹². Le patient devient édenté entre 20 et 40 ans¹¹.

Un retard d'éruption des dents primaires est soit observé¹², soit contesté³.

2. TDO (II)

Ce sous-groupe utilisé par Shapiro¹, accepte aussi quatre cas décrits par Leisti et Sjoblom¹⁰.

Contrairement au TDO (I) où l'on constatait seulement une augmentation de la densité de la voûte crânienne, les os longs paraissent aussi sclérotiques. La fermeture précoce des sutures crâniennes ne s'observe pas; le patient ne sera plus un dolicocephale obligatoire. Il est prognathe mais sans dents incluses, avec une bosse frontale, un canal auditif plus étroit chez le mâle¹⁰. Ses cheveux sont laineux, assez clairsemés et facilement arrachables. Les poils du visage ont une croissance lente chez l'adulte et les ongles sont plats, minces et fragiles¹⁰. L'émail dentaire est aussi hypoplasique avec des puits et fissures. Les dents sont décolorées, taurodontes, avec des racines courtes et des lésions périapicales. Contrairement au TDO (I), l'éruption des dents est précoce^{10,11}.

3. TDO (III)

Ce sous-groupe comprend 11 cas rapportés par Shapiro¹, et que Freire-Maia et Pinheiro¹¹ ont classifié comme un sous-groupe différent.

Dans ce groupe, seul le crâne est atteint et les clavicules sont légèrement sous-modelées. La voûte crânienne est augmentée en densité et en épaisseur. La diploé, les mastoïdes, les sinus frontaux sont complètement oblitérés. L'épaississement progressif du crâne conduit à une macrocephalie¹.

La différence entre les types (I), (II) et (III) s'exprime aussi par l'allure du cheveu qui sont bouclés dans le TDO (III). La

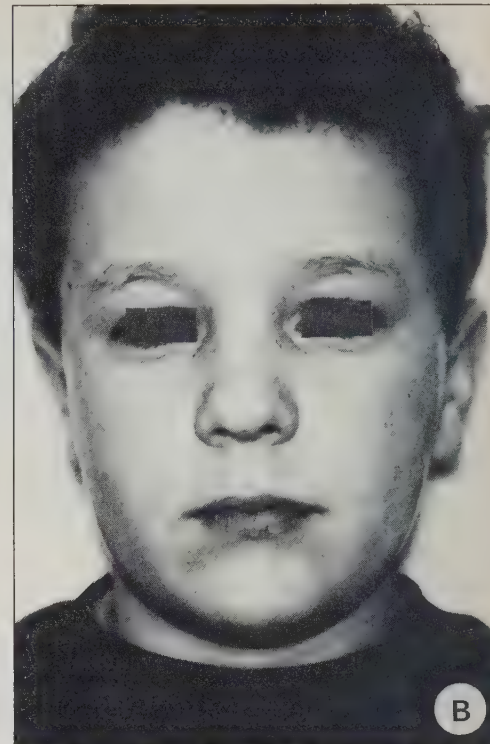


Fig. 1 A et B – Profil et face de Marc, avec ses cheveux blonds, une bosse frontale et une hypoplasie relative du maxillaire supérieur.

bosse frontale et le prognatisme sont aussi présents. L'intelligence n'est pas affectée.

Les dents ont un aspect semblable à celui observé dans les types (I) et (II). Elles ont cependant une couleur normale. L'émail est hypoplasé mais non la dentine. Leur éruption est retardée¹.

Le diagnostic

Des critères minimum pour poser un diagnostic de syndrome TDO ont été établis. Ce sont:

1. des cheveux drus et bouclés à la naissance qui peuvent devenir droits entre 20 et 40 ans;
2. l'émail des dents primaires et permanentes hypoplasique ou hypocalcifié;
3. de vastes chambres pulpaire et des molaires taurodontes.

D'autres caractéristiques sont souvent présentes mais ne sont pas indispensables pour le diagnostic de TDO. Ce sont les anomalies des ongles, l'ostéosclérose du crâne, l'hypodontie, les dents incluses, les lésions périapicales multiples et le retard de l'âge dentaire⁹.

Les anomalies dentaires permettent le plus souvent de poser le diagnostic de TDO. On va ainsi poser très souvent ce diagnostic entre six et 12 mois au moment de l'éruption des dents primaires.

Chez certains patients, le syndrome TDO s'accompagne aussi d'une élévation de la phosphatase acide sérique sans que l'on puisse l'expliquer¹.

Les complications les plus fréquentes

du syndrome TDO sont les complications dentaires: attrition, exposition de la pulpe, formation d'abcès et autres lésions périapicales, perte prématurée des dents. Ce syndrome ne semble pas affecter la longueur de la vie²⁻¹³.

Histoire de cas

Deux frères, Dominic sept ans et Marc neuf ans, ont été référés à la clinique dentaire de l'hôpital Ste-Justine, avec des symptômes du TDO. Ce diagnostic avait été posé par le département de génétique après examen. Marc présentait une oligodontie et possédait neuf dents (11, 14, 17, 21, 23, 24, 27, 37, 47). Dominic présentait un retard d'éruption et une réduction du nombre des dents à 11 (11, 16, 18, 21, 26, 28, 34, 35, 36, 44, 46). Selon les parents, les enfants ne présentaient aucun signe et symptôme particulier, à l'exception d'une tendance à présenter des ecchymoses et à souffrir d'infections respiratoires. On ne signale aucune malformation congénitale ni maladie héréditaire dans la famille. La naissance des deux garçons a été précédée de trois fausses couches précoces.

Interrogée, la mère affirme avoir eu une dentition complète avant de se faire poser une prothèse. Le père a une dentition normale.

Dominic est un blond frisé, avec des cheveux très fins et friables. Il est dolicocephale, avec un front proéminent, une hypoplasie du maxillaire supérieur et une protrusion de la mandibule. Ses mains



Fig. 2 — La radiographie démontre entre autres des agénésies partielles et la persistance de dents primaires.



Fig. 3 — Les dents présentes démontrent une forte attrition.

sont courtes et trapues avec une hyperextensibilité des articulations et des phalanges distales. À l'examen endobuccal, on observe deux incisives centrales permanentes très larges et des petites incisives inférieures primaires avec une grande attrition. Il ne présente presque pas de carie et aucune lésion périapicale. On n'observe pas non plus d'inclusion dentaire mais un retard d'éruption.

Marc présente une bosse frontale avec proéminence des arcades sourcilières, une hypoplasie relative du maxillaire supérieur (fig. 1 A et B). Ses mains sont courtes et trapues avec une clinodactylie bilatérale et une hyperélasticité des arti-

culations. Ces cheveux sont plutôt raides, fins et friables. Il présente les mêmes signes buccaux que son frère (fig. 2 et 3).

Discussion et conclusions

Les manifestations cliniques et radiologiques observées chez les deux frères correspondent bien au syndrome TDO. Cependant, on ne retrouve pas chez ces patients d'anomalies des ongles ou de l'émail dentaire.

Les analyses biochimiques des phosphates acides, et alcalines, du Ca et P sériques ainsi que les radiographies du crânes et, hémisquelette n'ont pas démontrés de déviation de la normale. La

mère a des cheveux normaux et ne présente pas d'anomalies sur les dents inférieures restantes. Le père a une dentition normale, des cheveux droits et blonds. Aucune étude génétique exhaustive n'ayant été faite, il est impossible d'identifier le parent porteur du gène défectueux. Des photographies de la fratrie et des neveux et nièces du côté maternel et paternel, aideront à mieux comprendre les détails de la filiation génétique.

L'extrême rareté de ce syndrome rend tout cas clinique additionnel extrêmement précieux pour le domaine médicale. Δ

Remerciements

Nous remercions D^r C. Mascrès (Dr.C.D., PhD, Faculté de médecine dentaire, Université de Montréal) d'avoir bien voulu réviser le manuscrit; D^r R. Charland (DDS, pédodontiste) d'avoir fourni le matériel photographique; le D^r L. Dalaire MD et D^r S.B. Melançon MD (Hôpital Ste-Justine) pour leur expertise en génétique.

Les tirés à part doivent être demandés à D^r Carvellas, Service dentaire, 3175, chemin de la Côte Ste-Catherine, Montréal (Québec), H3T 1C5, Hôpital Ste-Justine.

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January 15-17: Winter 1988 Dental Implant Symposium sponsored by the International Congress of Oral Implantologists at Resorts International Hotel at Paradise Island, Bahamas. For further details, contact: Margaret M. Jackson, Executive Director, I.C.O.I., 248 Lorraine Ave., 3rd floor, Upper Montclair, N.J. 07043 U.S.A.

January 16-23: 18th International Alpine Dental Conference at Hotel Annapura, Courchevel, France. For information, contact: International Dental Foundation, 24 Cadogan Square, London SW1X 0JP England.

January 19-23: Hawaii Dental Association's 85th Annual Scientific Session, Hilton Hawaiian Village Hotel, Honolulu, Hawaii. Contact the Association at (808) 536-2135.

January 21-24: 13th Annual Yankee Dental Congress in Boston Massachusetts. Over 125 scientific sessions and 400 technical exhibits. For information: Massachusetts Dental Society, 83 Speen Street, Natick MA 01760-4125 or call (617) 651-7511.

January 22-23: Computer Basics and Dentistry with Dr. W. Curtis Wise at the College of Dental Medicine, the Medical University of South Carolina. For information, contact: Dr. Gordan Stine, Director, Dental Continuing Education, Medical

University of South Carolina, 171 Ashley Ave., Charleston, S.C. 29425-2601.

January 23-30: 19th International Alpine Dental Conference at Hotel Sofitel, Val d'Isere, France. For information, contact: International Dental Foundation, 24 Cadogan Square, London, SW1X 0JP England.

January 28-30: Miami Winter Meeting – A Climate for Excellence, Miami, Florida. Table Clinic applications are available. Contact: Dotti DuBreuil, East Coast District Dental Society, 420 South Dixie Highway, Suite 2-E, Coral Gables, Florida, 33146. (305) 667-3647.

January 28 – February 1: 13th Asian Pacific Dental Congress and 42nd IDA Conference, New Delhi, India. Theme Esthetic Dentistry. Contact: Secretariat, C-56, N.D.S.E. – II, New Delhi 110 049.

January 29-31: Periodontal Surgery – A Didactic and Laboratory Exercise at the Royal Plaza at Walt Disney World, Orlando, Florida. For information, contact: Dr. Gordan Stine, Director, Dental Continuing Education, Medical University of South Carolina, 171 Ashley Ave., Charleston, S.C. 29425-2601.

February/Février 1988

February 4-5: The Institute for Practice Development: How to Build a Quality Dental Practice for the 1990's in Ft. Lauderdale, Florida. Contact:

The Institute for Practice Development, 7762 Silver Bell Dr., Sarasota, FL 34241 U.S.A.

February 5-6: Craniomandibular Seminar of B.C. by Dr. Jeffrey P. Okeson. The Clinical Management of Temporomandibular Disorders at Delta Hotel's Airport Inn Resort in Richmond, B.C. Contact: Cranio of B.C. 750-1675 Hornby St., Vancouver, B.C. B6Z 2M3 or phone (604) 682-8802.

February 6-13: Alpha Omega International Western Winter Seminar in Aspen, Colorado. Alpha Omega Professional Development Winter Seminar. Contact: Alpha Omega Fraternity, 2016 Bathurst St., Toronto, Ontario M5P 3L1.

February 10-13: Sports Medicine – For All Practitioners Course in Scottsdale, Arizona sponsored by the American College of Sports Medicine and the Children's Medical Center, Oakland, California. Contact: Stuart Zeman, M.D. Course Chairman, 2999 Regent St. #203, Berkeley, California 94705 U.S.A. (415) 540-8686.

February 11-15: Ethicality and Bioethics in Dentistry Symposium held in Boston, Massachusetts with the meetings of the American Association for the Advancement of Science. For more information, contact: Clifton Dummett, Professor of Dentistry, University of Southern California, School of Dentistry, Los Angeles, CA 90089-0641 U.S.A.

February 13: Implants as Related to Periodontics with Dr. Stanley Ross at the College of Dental Medicine, the Medical University of South Carolina. For information, contact: Dr. Gordan Stine, Director, Dental Continuing Education, Medical University of South Carolina, 171 Ashley Ave., Charleston, S.C. 29425-2601.

February 14-27: Refresher Course of the FVDZ in Davos, Switzerland. Contact: Freier Verband Deutsch Zahnärzte, Mallwitzstr. 16, D-5300 Bonn 2, West Germany.

February 19: Scientific Session of the Academy of Dental Materials, Hillenbrand Auditorium, American Dental Association, Chicago, Illinois. A poster session is planned. For information concerning this contact Dr. Evan Greener, Dept. of Biological Materials, Northwestern University Dental School, 311 E. Chicago Avenue, Rm. 10-019, Chicago, Illinois, 60611, USA. For information concerning the meeting phone (312) 908-6887 or (312) 642-9570.

February 19-20: Orthodontics in an Aging Society The Fifteenth Annual Symposium on Craniofacial Growth at the University of Michigan at Ann Arbor. For registration or more information, write to: Craniofacial Biology, The University of Michigan, 1024 Kellogg-Dental, Ann Arbor, Michigan 48109-1078.

February 20-21: The Institute for Practice Development: How to Build a Quality Dental Practice for the 1990's in Orlando, Florida. Contact: The Institute for Practice Development, 7762 Silver Bell Dr., Sarasota, FL 34241 U.S.A.

February 20-27: Virgin Islands Dental Association Meeting Speakers: Dr. Ron Jordan — restorative, Dr. Gary Taylor — endodontics, Dr. Merrill Menser — implantology. Social and spouse program. For information, registration and group rates at this limited attendance convention, contact: Dr. Robert Brandon, 85 Lonsdale Drive, London, Ont. N6G 1T4 (519) 657-3368.

February 21-24: 123rd Chicago Mid-winter Meeting, Theme: "Values and Visions in Dental Practice." Contact:

Chicago Dental Society, 30 North Michigan Ave, Chicago, Illinois 60602. Telephone (312) 726-4076.

February 26: Course by Dr. Terry Donovan, Contemporary Restorative Dental Materials — The pursuit of excellence. Calgary and District Dental Society. Contact: Dr. John Thompson 13 — 755 Lake Bonavista Drive S.E., Calgary, Alberta T2J 0N3. (403) 271-2777.

February 26: Posts & Cores: Getting to the Root of the Problem. One day symposium presented by the Professional Development Committee of the Ontario Dental Association in concert with Essential Dental Systems at the Skyline Hotel in Toronto, Ontario. For more information, contact: Professional Development, The Ontario Dental Association, 234 St. George St., Toronto, Ontario M5R 2P1 or phone (416) 922-3900.

February 27: Dentistry for the Immunodebilitated Patient — A New Frontier with Dr. Joseph M. Poland at the Omni Hotel, Charleston. For information, contact: Dr. Gordan Stine, Director, Dental Continuing Education, Medical University of South Carolina, 171 Ashley Ave., Charleston, S.C. 29425-2601.

February 27: Basic Dental Radiology at the College of Dental Medicine, Medical University of South Carolina. For information, contact: Dr. Gordan Stine, Director, Dental Continuing Education, Medical University of South Carolina, 171 Ashley Ave., Charleston, S.C. 29425-2601.

March/Mars 1988

March: The 5th Saudi Dental Convention at King Saud University, Saudi Arabia. For more information, contact: Azucena B. Bernardo, Clinic Secretary, College of Dentistry, King Saud University, P.O. Box 60169, Riyadh 11545, Saudi Arabia.

March 5-6: The Institute for Practice Development: How to Build a Quality Dental Practice for the 1990's in Miami, Florida. Contact: The Institute for Practice Development, 7762 Silver Bell Dr., Sarasota, FL 34241 U.S.A.

March 6-7: 65th Annual Session of the American Association of Dental Schools.

Commercial and Educational Exposition in Montréal at the Convention Centre. Contact: A.A.D.S., 1625 Massachusetts Ave. N.W., Washington, D.C. 20036 U.S.A.

March 9-13: International Association for Dental Research meeting, Montréal, Québec. Contact: International Association for Dental Research, 1111 14th Street N.W., Suite 1000, Washington, D.C., 20005. (202) 898-1050.

March 16-19: The Annual Finnish Dental Meeting 1988 in Helsinki, Finland. For more information, contact: Taru Ohtola, Training Manager, Finnish Dental Society, Rautatielaisenkatu 6, Helsinki, Finland.

March 19-20: The Institute for Practice Development: How to Build a Quality Dental Practice for the 1990's in Tampa Bay, Florida. Contact: The Institute for Practice Development, 7762 Silver Bell Dr., Sarasota, FL 34241 U.S.A.

March 19-26: 20th International Alpine Dental Conference at Hotel Sofitel, Val d'Isere, France. For information, contact: International Dental Foundation, 24 Cadogan Square, London, SW1X 0JP England.

March 24-25: The Institute for Practice Development: How to Build a Quality Dental Practice for the 1990's in Orlando, Florida. Contact: The Institute for Practice Development, 7762 Silver Bell Dr., Sarasota, FL 34241 U.S.A.

March 25-26: Omer Reed. Quality of Life. Quality in Dentistry. Prosperity in Both sponsored by the Calgary and District Gnathological Society at the Palliser Hotel in Calgary, Alberta. \$350 Dentists. \$150 Assistants & Spouses. For more information, contact: The Faculty of Continuing Education, The University of Calgary, 2500 University Drive N.W., Calgary, Alberta T2N 1N4 and/or (403) 220-4718/4729.

April/Avril 1988

April: Annual Scientific Conference of the Irish Dental Association in Ireland. For more information, contact: Margaret Ferguson, Irish Dental Association, 29 Kenilworth Square, Dublin 6, Ireland.

April 7-10: 15th Congress of the Arab Dental Federation and 7th Jordanian Dental Congress in Jordan. For more details, contact: Dr. Irfan Sultan, P.O. Box 1326, Amman, Jordan.

April 9: Update — The Medically Compromised Patient with Dr. Barbara Steinberg at the Medical University of South Carolina. For more information, contact: Dr. Gordan Stine, Director, Dental Continuing Education, Medical University of South Carolina, 171 Ashley Ave., Charleston, S.C. 29425-2601.

April 9-10: Update — Partial Denture Design at the College of Dental Medicine, Medical University of South Carolina. For information, contact: Dr. Gordan Stine, Director, Dental Continuing Education, Medical University of South Carolina, 171 Ashley Ave., Charleston, S.C. 29425-2601.

April 9-10: The Institute for Practice Development: How to Build a Quality Dental Practice for the 1990's in Tampa Bay, Florida. Contact: The Institute for Practice Development, 7762 Silver Bell Dr., Sarasota, FL 34241 U.S.A.

April 9-16: 21st International Alpine Dental Conference at Hotel Annapurna, Courchevel, France. For information, contact: International Dental Foundation, 24 Cadogan Square, London, SW1X 0JP England.

April 11-15: Ortho pedic Treatment with Functional Appliances in Malmo, Sweden. (English) For more details, contact: Lund University, Postgraduate Centre of Dentistry, Carl Gustafs vag 34, S-21421 Malmo, Sweden.

April 13-17: 1st International Congress on Maxillary Functional Orthopedics in Rio de Janeiro, Brazil. (English/Portuguese). For more information, contact: Secretaria Executiva do Congresso Congrex do Brasil, Rua de Ouvidor 60/614 — Centro 20040 — Rio de Janeiro — RJ — Brasil.

April 14-15: Annual Meeting of Alberta Society of Orthodontists and Western Canada Society of Orthodontists at Fantasyland Hotel in Edmonton, Alberta. Registration: Dr. J.L. Ares, 600 Empire Building, 10080 Jasper Ave., Edmonton, Alberta T5J 1V9 or phone (403) 421-1511.

April 14-16: 54th Annual Scientific Meeting of the Danish Dental Association & the Scandinavian Dental Fair Scandefa 88 For more information, contact: The Danish Dental Association, Committee for Postgraduate Education, 17 Amaliegade, Postbox 143, DK-1004 Copenhagen K, Denmark.

April 14-17: California Dental Association's Spring Scientific Session, Anaheim, California. Contact: Cissie Cooper, 818 'K' Street Mall, Post Office Box 13749, Sacramento, CA, 95853-4749, (916) 443-0505, (800) 421-8702.

April 21-22: GERIATRIC SYMPOSIUM "Times are changing — Are you ready? Clinical Management of the Elderly Patient" Winnipeg, Manitoba. Dentistry \$150, Allied Dental/Health Care Personnel \$75. Contact: The Division of Continuing Education, Faculty of Dentistry, University of Manitoba, 780 Bannatyne Ave., Winnipeg, Manitoba R3E 0W3. Tel: (204) 788-6331.

April 21-25: Third World Biomaterials Congress held in conjunction with the 14th Annual Society for Biomaterials, 20th International Biomaterials Symposium and the 10th Annual Meeting of the Japanese Society for Biomaterials in Japan. For more information, contact: Professor Yasuhia Sakurai, MD, Institute of Biomedical Engineering, Tokyo Women's Medical College, Kawada-cho 8-1, Shinjuku-ku, Tokyo 162, Japan.

April 25-26: Current Concepts in Periodontology in Malmo, Sweden. (English) For more information, write to: Lund University, Postgraduate Centre of Dentistry, Carl Gustafs vag 34, S-21421 Malmo, Sweden.

April 28-29: The Institute for Practice Development: How to Build a Quality Dental Practice for the 1990's in Orlando, Florida. Contact: The Institute for Practice Development, 7762 Silver Bell Dr., Sarasota, FL 34241 U.S.A.

April 28-May 1: Alabama Implant Congress XIV in Birmingham, Alabama. For information, write: Alabama Implant Study Group, P.O. Box 4682, Birmingham, Alabama 35206 USA.

April 29-30: Precision Partial Dentures. A two day participation course sponsored by the Ontario Academy of

General Dentistry at the Four Seasons Hotel in Ottawa, Ontario. \$380 AGD Members. \$395 non-AGD Members. Contact: Dr. John Miner (613) 235-8544.

May/Mai 1988

May 5-7: Second International Symposium on Feeding and Dentofacial Development will be held at the American Dental Association headquarters in Chicago, Illinois. For more information, contact: Second International Symposium on Feeding and Dentofacial Development, 919 North Michigan Ave., Chicago, IL 60611 U.S.A. Tel: (312) 266-8198.

May 8-12: Biennial Congress of the International Association of Oral Pathologists in Philadelphia, Pennsylvania. For details, contact: Dr. W.H. Binnie, Chairman, Department of Oral Pathology, Baylor College of Dentistry, 3302 Gaston Avenue, Dallas 75246 Texas U.S.A.

May 14-17: 24th Annual Convention of the Jamaica Dental Association in Ocho Rios, Jamaica. For information, write to: Dr. C.D. Barrett-Boyne, Convention Chairman, Jamaica Dental Association, P.O. Box 19, Kingston 5, Jamaica West Indies.

May 15-20: 25th Australian Dental Congress, Sydney, Australia. "An international meeting during Australia's bicentennial". A limited number of brochures are available at the CDA, or contact: 25th Australian Dental Congress, P.O. Box 29, Parkville, Victoria, Australia, 3052.

May 20-22: Periodontal Surgery — A Didactic and Laboratory Exercise at the College of Dental Medicine, Medical University of South Carolina. For information, contact: Dr. Gordan Stine, Director, Dental Continuing Education, Medical University of South Carolina, 171 Ashley Ave., Charleston, S.C. 29425-2601.

May 27-28: The Human TMJ — A Didactic Exercise with Dr. James River and Dr. Richard Dom at the College of Dental Medicine, Medical University of South Carolina. For information, contact: Dr. Gordan Stine, Director, Dental Continuing Education, Medical University of South Carolina, 171 Ashley Ave., Charleston, S.C. 29425-2601.

June/Juin 1988

June 2-5: 88th Annual Conference of the Canadian Lung Association at Hotel Newfoundland, St. John's, Newfoundland. For information, contact: A. Les McDonald, Director, Health Education and Program Services, Canadian Lung Association, 75 Albert St., Suite 908, Ottawa, Ont. K1P 5E7 or tel. (613) 237-1208.

June 3-4: Operative Dentistry at the College of Dental Medicine, Medical University of South Carolina. For information, contact: Dr. Gordan Stine, Director, Dental Continuing Education, Medical University of South Carolina, 171 Ashley Ave., Charleston, S.C. 29425-2601.

June 3-5: Annual Meeting of the Canadian Academy of Periodontology at the Pan Pacific Hotel in Vancouver British Columbia. The featured speaker is Dr. Jan Lindhe. For information, contact: Dr. E. Chesko, 104-520 17th St. West Vancouver, B.C. V7V 3S8, (604) 922-4711 or Dr. K. McNulty, 304-126 E. 15th St., North Vancouver, B.C. V7L 2P9, (604) 980-5822.

June 8-13: Hong Kong Dental Association/China Medical Association Joint Dental Symposium in Beijing, People's Republic of China. For details, contact: Mrs. Yvonne Ng, Executive Secretary, Hong Kong Dental Association, Duke of Windsor Social Service Building, 8/F, 15 Hennessy Road, Hong Kong. Tel: 5-285327.

June 21-24: 53rd Annual Meeting of the Pacific Coast Society of Prosthodontists in Sun River, Oregon. For more information, contact: Dr. Richard Frank, Prosthodontics SM-52, University of Washington, Seattle, Washington 98195 U.S.A.

July/Juillet 1988

July 1-3: British Dental Association's Annual Conference, Harrogate International Conference Centre, Harrogate, Yorkshire (UK). "Facing the Future". Contact: Linda Bridges, Conference Office, 64 Wimpole St., London, England. W1M 8AL.

July 1-3: Florida National Dental Congress sponsored by the Florida Dental Association will be held at the Marriott's

Orlando World Center, Orlando, FL. For more information, contact: Betty Waggener, Director, Florida National Dental Congress, 3021 Swann Ave., Tampa, FL 33609 U.S.A. Tel: (813) 877-7597.

August/Août 1988

August 7-11: Ninth Congress of the International Association of Dentistry for the Handicapped, Philadelphia, PA. Contact: Public Relations, (215) 576-2303, Abington Memorial Hospital, Abington, PA. 19001.

August 8-13: Preventive Dentistry and Epidemiology 1st International Conference sponsored by the Dental Health Center of Karlstad Sweden together with a Course on "Table clinics and demonstrations of preventive materials, programs and methods". For more information, contact: The Preventive Dental Health Center, c/o Hjärnbruket, Box 9055, S-650 09 KARLSTAD, Sweden. Tel: 46 054-13 20 10.

August 12-14: 4th Annual A.C.O.I. Symposium sponsored by the American College of Oral Implantology and the International Congress of Oral Implantologists in Denver, Colorado. For further detail, contact: Margaret M. Jackson, Executive Director, I.C.O.I., 248 Lorraine Ave., 3rd floor, Upper Montclair, N.J. 07043 U.S.A.

August 21-24: Canadian Dental Association's Annual Convention, at the Edmonton Convention Centre, Edmonton, Alberta. Contact: Linda Teteruck, Canadian Dental Association, 1815 Alta Vista Dr., Ottawa K1G 3Y6. (613) 523-1770.

August 21-25: New Zealand Dental Association's Biennial Conference, Christchurch, New Zealand. Contact: Dr. E.A. Cope, Conference Secretary, 200 Cashel Street, Christchurch 1, New Zealand.

September/Septembre 1988

September 7-9: Bristol 88 World Dental Conference University of Bristol, England, U.K. Decisions in Forward-Looking Oral Health Care. For information contact: Mr. B.P. Matthews, Bristol

88 World Dental Conference, University of Bristol, Senate House, Bristol BS8 1TH ENGLAND, U.K.

September 23-25: California Dental Association's Fall Scientific Session, San Francisco, California. Contact: Cissie Cooper, Director, Scientific Sessions, CDA, 818 "K" Street Mall, P.O. Box 13749, Sacramento, California, 95853-4749. (916) 443-0505.

October/Octobre 1988

October 9-14: International Workshop on Cranio-facial Trauma sponsored by the Australian Cranio-Maxillo-Facial Foundation. For information, contact: Mrs. D. Moody, Executive Officer, 226 Melbourne St., North Adelaide, S.A. 5006, Australia.

October 25-27: Medical/Hospitech 88 - 2nd International Medical, Hospital and Dental Equipment and Facilities Exhibition in Bangkok, Thailand. For more information, contact: SHK International Services Ltd., 22/F., 151 Gloucester Rd., Hong Kong. Telephone: 5-8326100.

October 26-29: 42nd Annual Meeting of American Academy for Cerebral Palsy and Developmental Medicine Deadline for free papers: February 12, 1988. Royal York Hotel, Toronto. INFO: AACPDM, P.O. Box 11086, Richmond, Virginia 23230 USA.

November/Novembre 1988

Novembre 21-25: Festival international du Film et de la Vidéo dentaires-XIèmes Journées dans le cadre du Congrès International de l'Association Dentaire Française. Bulletins d'inscription au concours devront parvenir au Secrétariat avant le 15 février 1988. Renseignements et inscriptions: Dr. M. Dolovici, Secrétaire générale du Festival international du Film et de la Vidéo dentaires, 92 avenue de Wagram, 75017 PARIS.

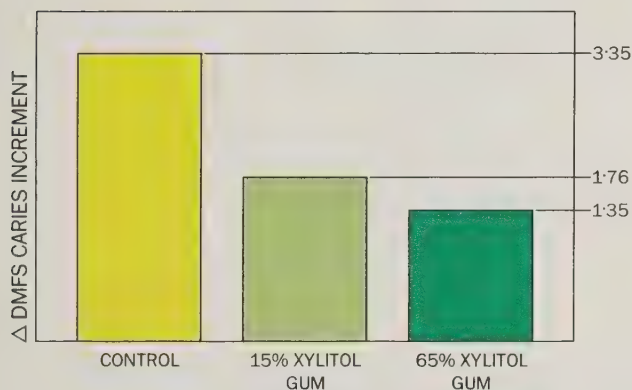
Miscellaneous

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²The Finnish Xylitol Study, 1982-1985. The French Polynesian WHO Study, 1979. The WHO Hungarian Study, 1981-1984. The Montreal Chewing Gum Study, 1987. Case studies available upon request.

³Trident Peppermint, Cinnamon, Freshmint, and Fruit flavours only.

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Candidates are requested to forward a letter of application, including the names and addresses of three referees the Selection Committee might contact. A current curriculum vitae should also be included. Deadline for receipt of material is March 31, 1988. Applications or further enquiries may be directed to:

Dr. J.G. Silver, Head
Department of Clinical Dental Sciences
Faculty of Dentistry
The University of British Columbia
2199 Wesbrook Mall
Vancouver, B.C. Canada V6T 1Z7
Telephone: (604) 228-4597

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Applications are invited for a full-time position, effective July 1, 1988, in the Division of Removable Prosthodontics, Department of Restorative and Prosthetic Dentistry.

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Interested applicants should send curriculum vitae and related documentation with at least three names for reference purposes to:

Dr. J.K. Sutherland, Head
Department of Restorative and Prosthetic Dentistry
College of Dentistry
University of Saskatchewan
SASKATOON, Saskatchewan
Canada, S7N 0W0



INSTRUCTIONS FOR CONTRIBUTORS

(Scientific articles)

Previously unpublished articles, critical reviews of material on advances in dentistry and clinical reports are welcomed by the Journal of the Canadian Dental Association for consideration for publication. Material is accepted by the Journal on the understanding it is submitted solely to this publication.

Scientific Articles: should not exceed 2,500 words with a minimum number of illustrations, diagrams, photographs, tables or graphs. An average of 20 references is acceptable.

Major Reports: are longer contributions dealing with diagnosis and treatment of dental disease, studies in education, clinical and laboratory research and other detailed investigations pertinent to dentistry and related fields.

Clinical Reports: are brief (up to 1,500 words) reports, case histories and clinical observations. References should be limited and a minimum number of illustrations used.

Opinions: fully documented (800 words or less), are welcome for publication at the discretion of the editor.

Word Count: is based on the calculation of approximately 250 words typed, doubled-spaced on 8 1/2 x 11 paper.

Manuscript Requirements: Submit three (3) copies (original and two copies) to the editor, Journal of the Canadian Dental Association, 1815 Alta Vista Drive, Ottawa, Ontario K1G 3Y6. All graphs, photographs, charts and tables must also be submitted in triplicate.

A covering letter and a summary of the submission must accompany each article. Abstracts will be translated into French. The full mailing address of the corresponding author must accompany each manuscript.

The editor reserves the right to edit manuscripts for stylistic consistency, clarity and conciseness. The corresponding author will receive a copy of the edited manuscript for checking prior to publication. Galley proofs will be forwarded to authors but changes other than correction of typographical errors will not be accepted. Authors will be given a 24-hour turnaround time. No exceptions will be made. Authors must list professional degrees, academic/hospital affiliations and appointments and are requested to **submit a photograph** of themselves for publication with the article.

Note: Manuscripts must be typed, doubled spaced on 8 1/2 x 11 paper on one side of the page only. An abstract must accompany each manuscript.

References: must be keyed to the text and numbered consecutively. Journal references must give the author's name, article title, abbreviated journal name, volume number, first page number and last page number of article, year of publication:

1. Hechter, F.J. Symmetry and dental arch form of orthodontically treated patients. *JCDA* 44:173-184, 1978.

For books, give the author's name, book title, location and name of publisher, year of publication:

2. Kilpatrick, H.C. Work simplification in dentistry, ed. 2. Philadelphia, Saunders, 1964.13

Permission and Waivers: must accompany the manuscript. Waivers are mandatory for the publication of photographs of patients unless faces are masked to prevent identification. Waiver forms are available from the Journal of the Canadian Dental Association, Ottawa. Permission of the author and publisher must be obtained for use of previously published material quoted in the text and for use of previously published illustrations.

Costs: Four-color illustrations are discouraged because of increasing costs of reproduction but requests for four-color illustrations will be considered on an individual basis, at the author's expense. Most articles are published at no cost to the author but a fee will be levied if extensive illustrative, formular, tabular or photographic matter is used.

Reprints: are available. Reprint request forms will be mailed to the corresponding author after the article is published and 25 reprints are available free of charge.

Review: all scientific articles are reviewed by selected consultant referees. Acceptance or rejection of an article for publication is based on their reports plus editorial consideration. The editor reserves the right to adjust manuscripts to conform to journal style.

Please direct all enquiries to: The Editor, Journal of the Canadian Dental Association.

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To be eligible for supporting membership, Canadian dentists must be members of the Canadian Dental Association.

Your membership fee is your contribution in support of FDI and its efforts to promote improved dental health on a worldwide basis. The subscription fee is \$40 or, in combination with a subscription to the International Dental Journal, \$82. All FDI member fees collected by CDA are forwarded to FDI's headquarters in London, England. The fee includes a small administrative fee levied by CDA to cover administrative costs and foreign exchange.

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Back Talk

By Jean Cives

Why did you become a dentist, Daddy?

My kids never asked that, in fact — that progeny for whom the good lady and self have sacrificed untold time and money. They accepted the fact that many an amalgam and denture had, in the mystery of life, become transmuted into a new ski jacket (lost two days later at the soccer field) or the dancing lessons (with her build, we must have been crazy) and suchlike. A patient had asked. I had been filling the patient's ear with typical dentist's balming babel. My distracting patter is a discussion with myself, reviewing the week's highlights. I had been telling the patient about my continuing Encounter Group at the Gas Station where we discussed the meaning of the statement, "Your wagon won't start because it's got".

My vocational choice was not directed by a desire to save teeth. At the age of vocational decision, I hardly even knew how many teeth I had myself, let alone other people's. My parents' generation were firmly committed to dentures. My father was known to remove his dentures and make faces at passing children; the effect was very popular with the Kindergarten set. Thinking back, I wonder how many of those kids unconsciously in later life, aspired to be edentulous so they could be the life and soul of the party. Clark Gable used to do the same thing on his hunting expeditions; he would poke his edentulous head out the tent and cry "Hullo from America's sweetheart!" No, the save-mankind-from-itself spirit did not move me.

Was it the implied wealth? Again, negative. When I visited my uncle, a country dentist, I was most impressed at three things only. First, he had his own pool table. That was certainly travelling first class in my book.

Second, he had a car with a sunshine roof, which meant that cousin Archie could tool down the byways, while I stood up on the passenger seat, with a twenty-two rifle and liberally peppered road signs, fence posts, and severely frightened various crows and small fauna. Thirdly, and most impressively, in

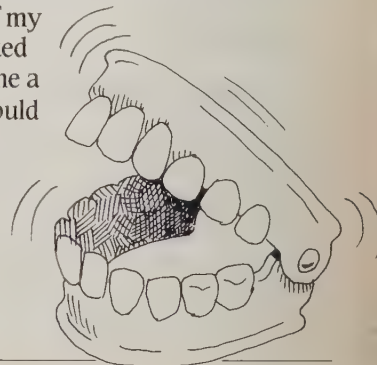


his bathroom he had a gadget which rolled toothpaste tubes from the bottom up. This made me realize at the age of twelve that truly the dentist is at the cutting edge of modern technology. In those days, we knew not of the 60's and 70's when dentists would be distinguished at conventions by velvet jumpsuits and Gucci shoes, on the lakes by their fifty foot cruisers so automated with automatic pilots and electronic fishing gear, that the only exercise you can get is screwing down the cork remover for the chilled white wine. No, the innocent twelve-year old suspected not the ownership of one's own floatplane, so one can fish faraway from the maddened crowd in your own lake with your very own fuel smells and engine's roar; nor the Mercedes which has to be parked six blocks away from the office in what appears to be a bullet proof vault to prevent unsolicited contact points. Nor the dentist's little new home on the prairie where every, yes, every, floorboard was screwed down because he did not like squeaky floors. I never knew of capital depreciation, of management companies, of incorporation, of the possibilities of owning a piece of a barge or a B-movie and that the act of "writing-off" a stereo system, video-recorder, easy chair and toilet paper meant taking it home to mother.

So, oral and financial health were not factors in my equation. Role models in my day were unknown beyond King Arthur, Sergeant Renfrew and the Green Hornet. The first time I was offered the Doctor role was by Nurse Jezebel at age six. She was offended by my polite refusal to examine her down at back of the garden shed. She complained to mom. And hell hath no fury like a six-year-old scorned. Her mother immediately suspended, for both parties, all the Civil Liberties created since Alexander the Great. At the age of six, I became shy of the Medico-dental clinical complex, and it was heightened later when I read in Kinsey's Report of such an incident which reached consummation — eleven years and three months lost opportunities seared my soul against playing Doctors.

Now the truth. I lived near the University. From time to time, we had boarders as was the custom of the neighbourhood. The neighbourhood gang played its softball, soccer, football, go-cart races — innocent but violent pursuits — with — you guessed it . . . students. Nothing was as impressive as a six foot medical student on a three foot stripped down Ferrari (one plank, one movable front axle and four wheels) coming out of a hairpin bend, impelled by a drink-crazed dental student, now a distinguished Oral Surgeon. The keen insight of the adolescent (that was before adolescence became a disease) registered that Dental Students had more fun than anyone. Hence, when I grew up, I wanted to be a Dental Student. I had no idea that this led to Dentistry. But even King Arthur had his problems when he was domesticated.

So, even if my kids had asked why I became a Dentist, I would have told them lies — what about you!



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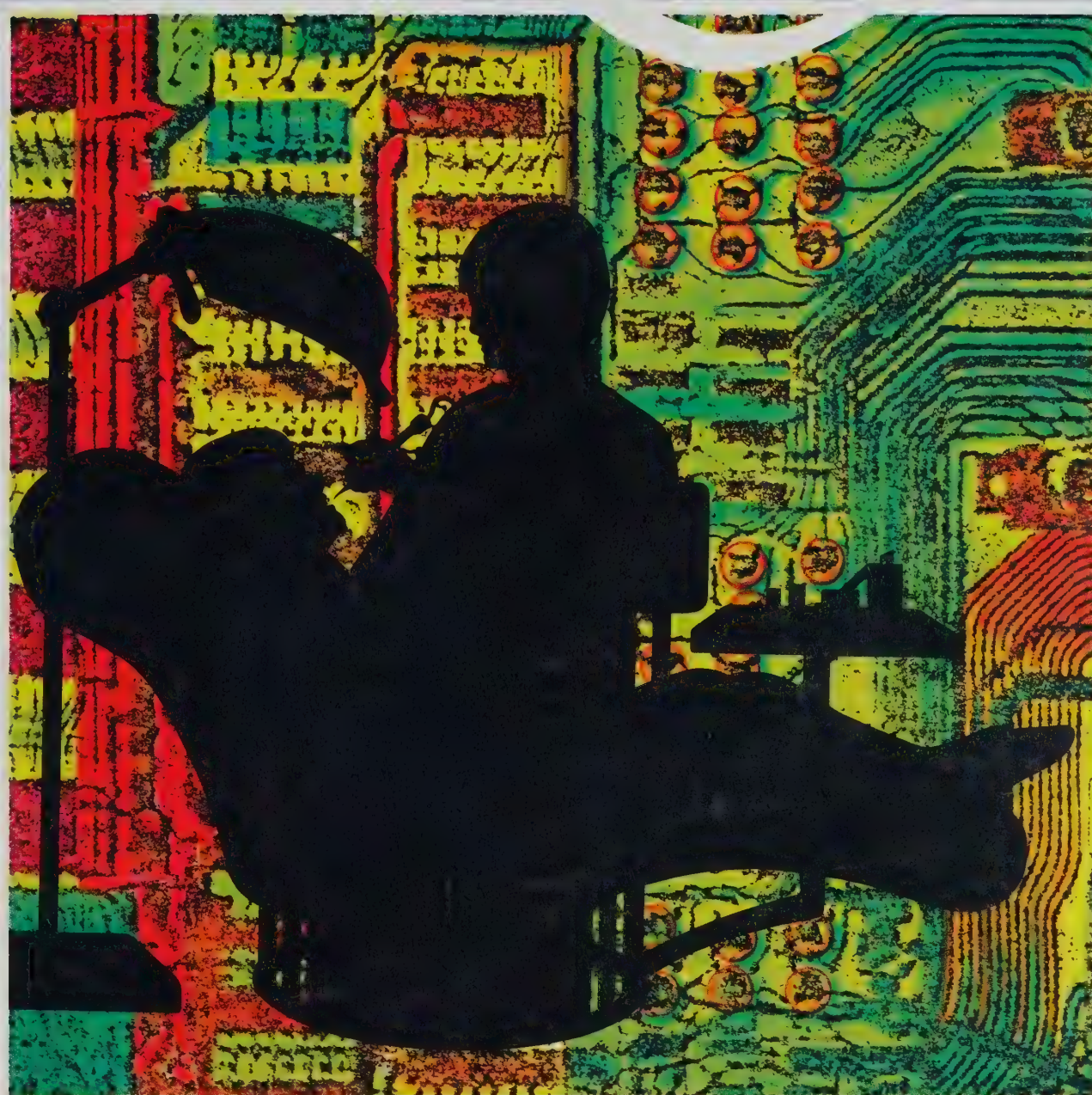
¹ Dental Advisor Vol. 4, No. 3, Sept. 1987
² Trends & Techniques Vol. 4, No. 14, Nov. 1987

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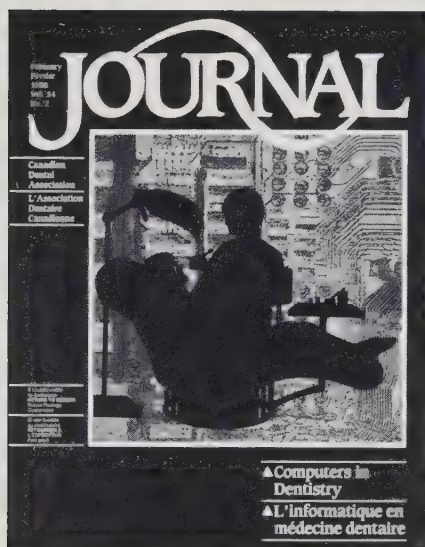
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Computers in dental practice: yesterday, today and tomorrow

Computers have now been used in some dental practices for over ten years. Why don't all dental offices have computer systems installed today, as some prognosticators, ten years ago, were predicting? Will all dental offices have computer systems ten years from now? What new roles will computers play in the dental practice of the future? These are some of the interesting questions I would like to discuss.

Great strides have been made in computer technology in the past ten years. Less expensive, more powerful, and more compact computers with many more useful functions are now available. Not only are computers being used to handle standard dental practice functions such as accounts receivable, insurance forms, and word processing; but, appointment book control, treatment planning, and marketing functions are being handled by computers in many offices, as these offices move closer to the ultimate goal — the 'paperless' office.

'Front-desklessness', a dental practice management concept advocated by Omar Reed and others, appears to be growing in popularity. This concept requires a computer system; should this concept catch on, computer sales to dentists will skyrocket.

In addition, computer systems are being developed to improve the quality and efficiency of actual dental treatment; for example, the CAD/CAM (Computer Aided Design/Computer Aided Manufacturing) system. This system, originally developed by Dr. Francois Duret of France, allows crowns and inlays to be fabricated without the need for an impression and to a degree of accuracy which was previously unattainable. Also, dental futurists are now boldly predicting that within ten years computer-assisted lasers will supplant the air-turbine handpiece for tooth preparation.

With all these happenings in the computer field, one would expect that all dentists in Canada will soon need, want, and have computer systems in their dental offices. This may be the case; but, similar predictions were made ten years ago and they never materialized. Apparently only about five percent of Canadian dental offices are computerized at present.

I believe that today computers are very useful in most dental offices and are becoming cost-effective in the larger dental offices. When reliable vendors are readily available, dentists will purchase computer systems. This belief is supported by an American survey in August 1986 indicating that almost twenty percent of all USA dental offices were computerized and that fifty-one percent of USA group dental practices were computerized.

I also believe that within ten years computers will virtually become mandatory in all but the smallest offices. Still, growth of computer utilization in Canadian dental offices will likely be slow for a few more years until: (i) adaptable, well-designed software for individual dental offices is readily available, (ii) well-established, financially-sound firms with top-notch service capability are selling and servicing the dental computer systems, and (iii) the dental computer system purchased is cost-effective. In Canada, all of these important criteria are still not being met, except, perhaps, in a couple of the larger cities.

One day soon, a well-designed, cost-effective computer system, backed by a reliable firm will be available for your office. Start preparing now for that day!!

*H.J. Stockton, DMD, CFP
Winnipeg, Manitoba*

(Dr. Stockton is Course Coordinator for Practice Management at the Faculty of Dentistry, University of Manitoba and a Consultant in Practice Management and Financial Planning.)

All statements of opinion and supposed fact are published on the authority of the author who submits them and do not necessarily express the views of the Canadian Dental Association, unless such statements or opinions have been adopted by the Association. The editor reserves the right to edit all copy submitted



An outstanding membership service

This time of year is premium time in my life. I don't mean it's the best time. It is the time when every insurance policy I own comes due for payment, reminding me not only of my mortality but of the extremely complex nature of this business called insurance. The dentists of Canada are very fortunate in this regard. We have a corporation (CDSPI) which manages plans (CDIP) for the benefit of CDA members, as well as other members of the dental family. We the dentists of Canada, through the CDA and the provincial dental associations own these plans, and our success in this important business venture is evident to anyone who takes the time to examine the products and compare.

Our insurance plans have been well managed and CDSPI has become a large and complex business. The decisions made by the Board of Governors of CDA with respect to the management of these plans are the end result of expert advice, careful debate and conscientious effort aimed at providing the best possible plans for everyone, and the most stable financial picture possible to meet short, intermediate and long-range goals. The careful and conservative management of our financial resources in this "business" is essential, if our plans are to have long-term stability and maintain their competitive edge in a very aggressive marketplace. We require the ability to weather bad times when they come, in order that the rates we all pay can continue to be the most competitive available. While there have been disagreements at times as to how we manage this business, the Boards of CDSPI and CDA have always exercised a responsible attitude with a common goal — we want to offer the best plans at the best rates to the dentists of Canada.

Our best weapon in the fight to meet our goal is simple: national commitment and unity. It is a fundamental truth that twelve to fifteen thousand dentists can do better over the long haul than smaller, fragmented groups, whether we are talking malpractice, LTD, office overhead, or the administration of our very successful pension funds. Efforts are always underway to strengthen and expand the plans and services available. This is an outstanding membership service. Think about it. Premium times in your life might even get better.

*Ron J. Markey, DDS, MSD
President of the Canadian Dental Association*

Changes announced on CFDE Board of Trustees

Some changes have recently been announced on the Board of Trustees of the Canadian Fund for Dental Education



Dr. T.E. Ramage of Vancouver, a Trustee since 1985, is now Chairman-elect of the Board.

Dr. Ramage

Dr. Ramage, a DDS graduate of the University of Washington in 1958, has conducted a private dental practice in Vancouver since that time. Since 1982, when he received his certification in prosthodontics, he has practised in that specialty.

For a number of years, he has been a part-time instructor in the Faculty of Dentistry of the University of British Columbia.

He has been active in organized dentistry at the local, provincial and national levels. He is a past-president of the College of Dental Surgeons of British Columbia, served on the Board of Governors of the Canadian Dental Association (1979-85) and on the Executive Council of the CDA (1982-84).

Dr. Ramage was General Chairman of the highly successful Canadian Dental Association National Convention in Vancouver in 1983.

He holds Fellowships in the International College of Dentists and the American



Mr. Robert Cajolet of Montréal has become Vice-Chairman, and also represents the dental industry in Canada.

College of Dentists. He is a member of the Canadian Academy of Restorative Dentistry, the American Academy of Gold Foil Operators and the Royal College of Dentists of Canada.

Dr. Ramage has presented table and chair clinics for state, provincial and national dental meetings in Washington State, California, Hawaii, Ontario, Manitoba, British Columbia and Puerto Rico.

Mr. Cajolet

Mr. Cajolet is Chairman of the Board of Totec Group Inc., a public company listed on the Montréal Stock Exchange, which controls: Denco Canada Dental, distributor of products, services and equipment for dental health; Adhoc Data Systems, distributor of Datapoint computer equipment, also involved in the conception and development of software for industry and the health professionals; Modudent, manufacturer of Cox Systems and Conex dental cabinets; and Securitex, manufacturer of safety products for the armed forces, municipalities and industry.



Mr. Lee Maddison, of Burlington, Ontario, has been newly appointed to the Board. He also represents the dental industry.

The Group consists of two factories, 10 distribution centres and 350 employees.

Mr. Cajolet is a member of the Chamber of Commerce of Canada, the Québec Chamber of Commerce, the Montréal Chamber of Commerce and is President of the Harvard Business School Club of Montréal and of the Dental Industry Association of Canada.

Mr. Maddison

Mr. Maddison is a Past-President of the Dental Industry Association of Canada and is Senior Vice-President, and Division Head, Medi-Dent Service, Division of Norex Leasing Inc.

For the past 25 years, Mr. Maddison has been associated with Medi-Dent Service and its relationship to the dental profession.

For the past 10 years, he has headed the division as it operated as a division of Citibank Leasing Canada Limited, and Norex Leasing Inc.

Medi-Dent has been a contributor to CFDE since its inception. △

Canadian Pension Conference discusses dental capitation

At its Regional meeting in Winnipeg on December 3, last, the Pension Conference held a panel discussion on Dental Capitation. This meeting coincided with the annual conference of Dental Executives and Licensing Authorities from across Canada, who took a half day from their own deliberations to participate in the very topical subject of capitation.

The Canadian Pension Conference, founded in 1960, and listing a membership of 1,100 representatives of industry, finance, government, labour, consulting insurance and trust companies, provides a forum for the discussion of all aspects of income security and benefit programs.

The four panelists — Dr. Bill Ryding, Director of Marketing for PACE Prepaid Benefit Programmes; Dr. Don MacFarlane, Chairman, Third Party Committee C.D.A.; George Strang, Manitoba Teachers Society and Jim Bates, Vice-President, Ontario Blue Cross, addressed the question, "Does dental capitation just cap costs or does it also place limits on your dental health".

Dr. Ryding traced the history of Capitation, indicating that its growth in Canada could be attributed to the increasing costs of dental care; increase in numbers of dentists; the interests of governments and the success of such plans in the U.S.A. A capitation plan according to Ryding would not interfere with freedom of choice for the patient but would allow dentists, without loss of income, to deliver quality care, and at the same time cost contain the annual Canadian dental bill of \$1.2 billions.

'Is new always better?'

Dr. MacFarlane informed the audience that existing fee for service plans, although not perfect, have provided Canadians with some of the finest dental care in the world. The present system has been committed to prevention but capitation plans do not operate in a similar fashion. He posed the question, "Is New Always Better?". Dr. MacFarlane said capitation plans in the United States had shown that there was less preventive

care, less special care, equal basic restorative treatment, but more removable prosthesis at the expense of fixed Crown and Bridge. The average capitation patient received less care with lower quality than even the premium reductions could account for. MacFarlane left no doubt that what cost containment means to the capitation proponents was a reduction in real dollars for dentists with the potential of lesser treatment for patients.

Mr. George Strang, Welfare Services Co-ordinator for Manitoba Teachers, said that after listening to Drs. Ryding and MacFarlane he found himself sitting on a fence, not sure which plan was best for the consumer. He posed the question, how was the purchaser going to deal with the issue of "freedom of choice"? He indicated there would be reluctance of employees having to leave a long-time family dentist for one on the capitation list, and how could an employee determine the cost and quality of one plan versus another? No doubt there would be confusion and an educational element would be a necessary requirement.

Mr. Jim Bates, Vice-President of Ontario's Blue Cross, presented capitation from the insurers point of view. He reported that payouts by insurance companies had increased over and above fee increases — between 1980 and 1986 dental fees had increased an average of 49 per cent, but insurance payments had increased approximately 75 per cent. Employers, who are Blue Cross' customers, were asking for cost containment and now capitation seems to be the answer. He did indicate that more time would be required to inform employees about capitation, and "someone" would be expected to pay for these added educational costs.

The audience of about 100 dentists and insurance personnel were invited to question the panelists. Lively dialogue continued for more than an hour. It was rather obvious that the dental profession was convinced that "No Dentist No Capitation" was in the best interests of all concerned, but it was equally evident that quite a number of the representatives of the insurance industry had some "mixed feelings". One Manitoba rural insurance representative posed the valid question, "How can we expect our rural customers to abandon their rural community dentist for one in Winnipeg who was on the capitation list?" △

CANADIAN CUSTOMS CLASSIFICATION Major Changes Effective January 1, 1988

This article is written to provide important information to dentists, dental professional management companies, or dental professional corporations who **import dental goods directly into Canada**. Dentists or corporations who purchase dental goods through dental supply companies will not be affected by most of the information provided in this article.

On January 1, 1988, Canada adopted a totally new international language for coding imported goods. This new classification language is known as the **Harmonized System (HS)**.

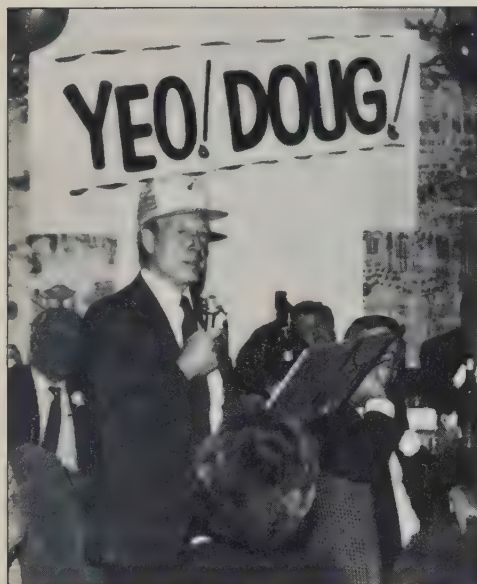
In the past, the dental profession has become familiar with Custom Tariff numbers such as 47600-01 for dental instruments and X-ray equipment, 48001-01 for dental cements, and 48007-01 for amalgams and composite filling materials. These are the numbers that will be changed and, in many instances, more numbers will be introduced to classify dental goods more specifically.

It is important that all members of the profession involved in direct importing of dental goods be aware that tariff items have been recoded and reworded; some may carry new rates of duty. However, Revenue Canada has indicated that the new system has been developed with every effort to keep "revenue neutral". The CDA Taxation Committee requests that any increase in the rates of duty, as a result of the new Harmonized System, on any goods imported into Canada be reported to the CDA Headquarters (Attention: Mrs. Sandra Deziel) by mail with proper documentation attached.

The Taxation Committee is attempting to develop a revised list of former tariff numbers and current HS classification numbers for CDA members' use. However, this task is proving to be very time-consuming. The Committee recommends that all members of the profession utilize the services of a customs broker for direct import shipments over the next six months, or until more specific information is received regarding dental goods' HS classification. △

Robert N. Hicks, DDS, MS, Chairman, Taxation Committee

Colleagues honor Dr. Douglas Yeo on retirement



A festive air reigned during the recent "Yeo Day" celebration in Vancouver, as friends and colleagues paid tribute to Dr. Douglas Yeo (with microphone and baseball cap, left centre). Among those honoring Dr. Yeo on his retirement were CDA President Dr. Ron Markey.

Dr. Douglas J. Yeo, Associate Dean, Faculty of Dentistry, University of British Columbia, was "roasted and toasted" recently in Vancouver, by friends, colleagues and representatives of dental organizations, on his retirement.

Tributes were also paid to Dr. Yeo in person by CDA President Dr. Ron J. Markey, and in a telegram from CDA's Executive Director, Jardine Neilson.

At the "sold out" gathering of about 200 guests who enjoyed the Chinese cuisine, it was announced that a student assistance fund has been established as a tribute to Dr. Yeo's own contribution of time, effort and talent, to dental education. Dr. Yeo has been invited to set the terms of the award, and the interest from the fund will now provide a substantial bursary to assist dental students with expenses.

Greetings from the UBC Faculty of Dentistry were conveyed by the Dean, Dr. George S. Beagrie. Dr. John Diggins paid tribute in the name of the College of Dental Surgeons of British Columbia, and Dr. Jim Stich spoke on behalf of the UBC Dental Alumni Association.

An illustrious career

Dr. Yeo has been an active member of the CDA for many years and in 1983, was the recipient of CDA's Distinguished Service Award.

He served CDA on several prominent

councils and committees, including membership on the Council on Public Health and the Council on Education, which he later chaired.

Graduated in 1951

He graduated from the Faculty of Dentistry, University of Toronto, in 1951. His postgraduate studies were pursued at the University of Michigan, where he obtained an MPH degree in 1953.

He first became actively involved in community dentistry in Prince George, B.C. in 1951-52, when he was dental director of the Cariboo Health Unit. He was later named Regional Dental Consultant for the Fraser Valley area (1953-55) and from 1955 to 1964 was Director, Dental Health Services, for the metro Vancouver area.

He has served as an executive member of the B.C. branch of the Canadian Public Health Association and as Vice-President of the College of Dental Surgeons of British Columbia.

His university teaching career began in 1964, when he was appointed Associate Professor and Head of Public and Community Dental Health at the UBC Faculty of Dentistry. Promoted to full professorship in 1970, Dr. Yeo became Assistant Dean of the faculty in 1972. In 1977 he was named Acting Dean and the following year, Associate Dean.

He has been registrar of the B.C. College of Dental Surgeons, an executive member of the Association of Canadian Faculties of Dentistry, the National Dental Examining Board, and examiner with the Section on Public Health of the Royal College of Dentists of Canada and the Canadian Association of Forensic Sciences.

Dr. Yeo has also been the Vice-President of the International College of Dentists (Canadian Section) and was named President of that Section in 1983.

He became a Fellow of the International College of Dentists in 1973 and of the Royal College of Dentists of Canada in 1975. He is a member of the Pierre Fauchard Academy and was the recipient of the Distinguished Service Award from the Canadian Red Cross Society.

Also with the Red Cross, Dr. Yeo has served as dental consultant for Red Cross Youth.

RCAF officer

Dr. S. Wah Leung, in a biographical sketch prepared for the occasion, stated that the predoctoral Doug. Yeo, at the age of 18, became the youngest commissioned Royal Canadian Air Force officer in overseas service.

He served in the No. 410 Night Fighter Squadron in the defence of Britain, and later in the Second World War, saw service in Northwestern Europe. Δ

Toronto Winter Clinic — a record attendance

A record attendance of more than 2,800 dentists, auxiliaries and exhibitors made the 50th Anniversary of Toronto's Academy of Dentistry Annual Winter Clinic a resounding success.

Thursday, November 26 was a very full day — from 9 a.m. to 9 p.m., and presented a variety to satisfy every dental need. Seventeen impressive clinicians covered a wide range of subjects Fitness to Stress; Esthetics to Endodontics and from TMJ to Periodontics. There were 27 table clinics and as many topics, and 11 student clinics were presented during the evening program. A constant crowd of attendees appeared to please the more than 130 exhibitors.

Jeremy Brown, a daily radio commentator from CKFM in Toronto, headlined the noon luncheon with a satirical speech entitled: "The History of Canada Since 1066."

The evening dinner was highlighted by a presentation of an Honorary Life Membership to Dr. Arthur Wood, who has spent about 35 years developing, producing and testing protective devices for young athletes involved in contact sports, such as hockey, lacrosse and football. Dr. Wood had previously received the Distinguished Service Award from the Canadian Dental Association, in 1985. Δ



Dr. Oleg S. Kopytov, President of the Canadian Association of Orthodontists, is seen (left), presenting the Canadian Association of Orthodontists' Distinguished Service Award to Dr. Frank E. Shamy.

Dr. Frank Shamy receives historic orthodontists' service award

During the 39th annual meeting of the Canadian Association of Orthodontists, Dr. Frank E. Shamy, of Montréal, was presented with that Association's first Distinguished Service Award.

Dr. Shamy, who is a graduate of McGill University's Faculty of Dentistry (1956) and the Université de Montréal, Department of Orthodontics (1964), has been a lecturer at McGill University and continues to lecture and present courses in orthodontics in Canada, the United States and Europe, while maintaining a private specialty practice in Montréal.

He has been President of the Québec Association of Orthodontists (1975-76), President of the Canadian Association of Orthodontists (1983-84), President of the Canadian Foundation for the Advancement of Orthodontics (1984-85), Chairman of the Northeastern Society of Orthodontists Annual Meeting (1979), AAO 1987 Annual Meeting Sessions Chairman, and recently named Ambassador by Appointment to the City of Montréal.

CDA members will recall him as the

George W. Grieve Memorial Lecturer at the CDA National Convention in Halifax in 1986.

The Distinguished Service Award was presented in recognition and appreciation of outstanding contributions and exemplary services rendered for the benefit and advancement of the orthodontic profession and the Canadian Association of Orthodontists.

The Association also honoured three new Life Members, Dr. Bernard Hemrend, Dr. Robert Leuty and Dr. David Way, who have served the dental profession for forty years.

Dr. Russell Greer, President of the American Association of Orthodontists, attended the Annual Meeting Sessions and addressed the members and invited guests at the President's Luncheon. A record number of orthodontists, companions and spouses, staff personnel and exhibitors attended the Scientific and Annual meeting presided by Dr. Oleg S. Kopytov, President. The Association will meet next in Edmonton, Alberta, August 19-21. Δ

CPHA issues statement regarding AIDS and the workplace

The Canadian Public Health Association has issued a statement regarding AIDS and the workplace.

The text of that statement follows.

"Since the Human Immunodeficiency Virus is not spread by ordinary casual, social, workplace or school activities, there is in general no basis for screening tests or exclusion of anyone known to be infected in the work or school setting," said Dr. David Walters, Director of the CPHA AIDS Education and Awareness Program. "While the majority of workplace settings have managed the issue well, the exceptions where infected people have experienced discrimination must be discouraged."

Dr. Ian Gemmill, Chairman of the Sexually Transmitted Disease Division of CPHA, and Chairman of the CPHA AIDS Program Advisory Committee, stated that "the maintenance of strict confidentiality about HIV infection at work or at school is crucial to prevent discriminatory action against persons who pose no risk to others." Dr. Gemmill went on to say that "education about HIV infection in schools and the workplace can set a positive, supportive attitude toward this disease."

Public reaction concerning HIV infection in some settings can be exaggerated when risks to others are perceived to be higher than actually exist. "Since no one has ever been infected by casual contact, the risk is only 'theoretical'," said Dr. Walters, and he said that educational efforts to inform the public about protection from the real risks of transmission by sexual activity and the sharing of contaminated needles when injecting drugs are effective measures to limit spread of HIV infection. Policies that are restrictive and discriminatory are counterproductive.

Agencies or individuals are encouraged to check with their local and provincial public health officials regarding questions of screening tests and workplace policies before implementation.

For more information, you are invited to contact:

Robert Burr

Business: (613) 725-3769

Home: (613) 236-4927

CDA observers attend ODA Governors meeting

CDA President Dr. Ron J. Markey, President-elect Dr. Jack Niedermayer and Executive Director Jardine Neilson were invited observers at the Ontario Dental Association Board of Governors meeting held in Toronto, November 27-28.

ODA President Dr. James R. Brookfield highlighted the most recent issues of concern to the ODA membership:

- ODA's involvement with a targeted plan for children who are at risk and whose family resources were not adequate to provide funds for necessary dental care;
- ODA's presentation to Ontario's Minister of Health regarding a dental plan for seniors;
- the continuing complexities of the Government's Health Professions Legislative Review — particularly as it relates to a separate and distinct College for Dental Hygienists and the expanded role of Denture Therapists in partial dentures;
- Capitation — "No Dentists, no Capitation".

Dr. Brookfield was forthright in his comments — "the profession is very much under the gun. We must take appropriate action to ensure that our fee guide is fair and is fairly used by all members or we will see more companies tak-

ing arbitrary steps to limit their costs which, in all probability, will be hard for our patients and for our members".

CDA greetings

Dr. Ron Markey, CDA President, brought greetings from the national organization. He spoke of his observation that Canadian dentists are held in high respect throughout the world. He also stated that world dental organizations appeared to all face similar problems — membership/manpower, auxiliary utilization, alternative payment plans, inter-professional relationships, government relations and infection control.

Dr. Markey announced the upcoming Conference on Infection Control to be held in Toronto on February 28 and 29. He sought the cooperation of the ODA Board of Governors in presenting guidelines on Infection Control.

Ontario Health Minister

Ontario's new Minister of Health Elinor Caplan addressed the ODA Board of Governors meeting. She noted that because at that time she had only been in office for about eight weeks, she was not able to deal in intimate detail with dental matters. She did, however, review some

of the broad parameters of her Department's \$12 billion budget. These areas of direct concern to dentistry, were currently under review, she said:

- Health Professions Legislation
- Panel on Health Goals
- Health Promotion

The Minister did leave a clear message and pledge of communication, cooperation and consultation. As one ODA member remarked: "It was like a breath of fresh air!" △

Three new members appointed to Medical Research Council

Health and Welfare Minister Jake Epp recently announced the appointment of Kayla Hock of Biggar, Saskatchewan, Dr. Allan Ronald, of Winnipeg, and Dr. Calvin Stiller of London, Ontario, as members of the Medical Research Council, each for a three-year term.

Born in Romania, Mrs. Hock came to Canada in 1950. She is a businesswoman and homemaker who has been active in many community organizations. Mrs. Hock is a member of the Saskatchewan Human Rights Commission.

A native of Portage la Prairie, Dr. Ronald is a physician and medical microbiologist. He has been on the Faculty of Medicine of the University of Manitoba since 1968 and is now Head, Department of Medicine and Physician in Chief. He has been active on many working and advisory medical/microbiology committees from the university to the national level. His research interests are infectious diseases, particularly sexually transmitted diseases.

Dr. Stiller, a physician, is a graduate of the University of Saskatchewan and joined the University of Western Ontario in 1967 as a research fellow — nephrology. Now Professor of Medicine there, he is Chief of the Multi-Organ Transplant Services at University Hospital and Director, Immunology Group, at the John P. Robarts Research Institute. △

Obituaries/Nécrologie

Blanshard, George A.: A graduate of the University of Toronto in 1949, Dr. Blanshard practised in Windsor, Ontario.

Cougle, Kenneth: a graduate of Dalhousie University in 1936, Dr. Cougle conducted a practice in Saint John, New Brunswick for 41 years. He was a Past-President of the New Brunswick Dental Society.

Green, Louis N.: Born in 1914, Dr. Green graduated from the University of Toronto in 1936. He practised in Winnipeg and was a Life Member of the CDA, the Manitoba Dental Association and the Winnipeg Dental Society.

Hardin, Samuel H.: Dr. Hardin was born in Latvia in 1897 and graduated from McGill University in 1925. He practised in Edmonton, Alberta, and was a Life Member of the CDA.

Larue, Perrault: Diplômé de l'Université de Montréal en 1949, le Dr Larue exerçait sa profession à Baie Comeau, au Québec.

Meharry, R.A.: Dr. Meharry was graduated from the University of Toronto in 1949, and conducted a dental practice in Windsor, Ontario.

AAPHD annual session call for abstracts

The American Association of Public Health Dentistry (AAPHD) is inviting papers on a broad range of dental public health subjects, for presentation at the AAPHD's 51st Annual Meeting in Washington, D.C. That meeting will be held from October 5 through October 7, next, in conjunction with the Fifth Annual International Conference of Chief Dental officers.

The theme of this AAPHD meeting is "Dental Public Health: Building an International Partnership."

As this year's theme is one of international partnership, a special call for international papers is being made. Key topics include trends in oral disease, innovative preventive and educational measures, national dental programs, dental care delivery systems, infection control and health promotion. In addition, papers dealing with U.S. national, state and local public health are welcomed.

Abstracts will be selected by a review process and will be rated on the following criteria: originality, significance, and quality of supporting data. Abstracts should be 200 words or less, fit on one-half of an 8½" × 11 sheet of paper, single spaced, should first give the title (10 word limit), and then list authors, capitalizing initials and last names. Place an asterisk after the name of the presenter. Institutions should follow the last author's name. The paper should be submitted with the understanding that the same paper will not be presented at another meeting. Acceptance of the abstract requires that you present the paper at the Annual Meeting. Authors who fail to present the paper after acceptance may forfeit their privilege to present at future meetings. Please provide the name, address, and phone number of the presenter or contact author. Both oral and poster presentations are likely. Indicate your preference *and* if you are willing to present in either mode. Three copies of the abstract and a self-addressed, stamped envelope must be received by *April 1, 1988*. Authors will be notified by July 1, 1988 of acceptance. Abstracts should be submitted to:

R. Gary Rozier, DDS, MPH
Department of Health Policy &
Administration

CB #8140, Kron Building
University of North Carolina, Chapel Hill
NC 27599-8140. △

CANADIAN DENTAL ASSOCIATION

1988 Convention Hosted by Alberta Dental Association August 21-24, 1988

Congregate in '88 • Edmonton, Alberta

Edmonton awaits the pleasure of your company, August 21-24, 1988. This is one of the nicest times of the year to sample the city, with its North Saskatchewan River Valley and many beautiful ravines and parks.

For you and your family, West Edmonton Mall beckons with its many famous shops and restaurants. Canada Fantasyland, the world's largest indoor amusement park, will thrill children of all ages, as will the world's largest indoor water park where you can body surf, swim, sunbathe or spin on more than 20 water slides.

Before arriving in Edmonton, why not take your family on a trip through the Canadian Rockies? Drive from Banff to Jasper along the famous Icefields Parkway and treat yourself to spectacular mountain scenery. Take a trip on the Columbia Icefields, golf at the famous Kananaskis, Banff Springs and Jasper Park golf courses — reservations are a must.

When you arrive in Edmonton there's also Canada's most advanced and dramatic planetarium at the Space Sciences Centre and at the Convention Centre, Canada's Aviation Hall of Fame.



Canada's Aviation Hall of Fame at the Edmonton Convention Centre.

Convention Centre! Yes that's right, we are meeting at the beautiful Convention Centre — carved into the bank of the North Saskatchewan River Valley. A warm welcome awaits you Sunday evening August 21, at an informal get together with your friends and entertainment by the world famous Shumka Dancers.

The Convention Centre will be the focus of our scientific program. Some of our confirmed lectures are:

Jim and Naomi Rhode <i>Phoenix, Arizona</i>	On Becoming a Peak Performer The Peak Performer Practice
Dr. Bryce Larke <i>Edmonton, Alberta</i>	Aids and Infection Control
Dr. Frank Speer <i>Tacoma, Washington</i>	Esthetics
Dr. Ron Roth <i>San Mateo, California</i>	Grieve Memorial Lecture
Dr. Ed Sauer <i>Houston, Texas</i>	Capitation
Mr. Robert Sydenham, RPt <i>Edmonton, Alberta</i>	Low Back Pain

That's enough for now — a more complete list and Pre-convention continuing education courses to come next month.

Plan to come and sample Western hospitality at its best in an exciting, cosmopolitan city located in the geographic centre of Alberta.

Advance registration forms coming next month. Δ



The breathtaking natural beauty of Lake Louise in Banff National Park in the Canadian Rockies.

WHAT MOST ADULTS HAVE YOU DON'T WANT

Gum disease.

It affects 9 out of 10 Canadian adults. It's responsible for 70% of all adult tooth loss. And it's virtually unnoticeable in the early stages.

But you don't have to get gum disease.

Brush and floss carefully. And see your dentist for preventive checkups.

Got it? Good.

DENTAL HEALTH
LET'S KEEP IT
*Good For Life*TM

CANADIAN DENTAL ASSOCIATION

Did you know?

A radio show in the 1930's established the "6 months check-up". Sponsored by Pepsodent, the famous radio entertainers "Amos 'n Andy" reached twenty million people six nights a week. Typical radio continuity read:

"No tooth paste can take the place of a competent dentist. Pepsodent has never been represented as a "cure-all" or as a substitute for dental care. As dentists will tell you, Pepsodent is an able assistant in the work of keeping teeth and gums clean and healthy. They advise: Use Pepsodent twice a day. See your dentist at least twice a year."

Dr. Lewis Archibald of Halifax was the 1987 recipient of the Nova Scotia Dental Association's prestigious Philip S. Christie Award.

Dr. Archibald's citation noted that he has donated time, energy and expertise to the dental profession in Nova Scotia for many years. The award is presented annually to a member of the Nova Scotia Dental Association who has offered a single contribution or has given sustained service to the dental profession for not less than 15 years. It is the highest honor to be bestowed upon a member of the NSDA.

The presentation was made in Halifax on November 18, last. △



PHOTO, COURTESY OF THE NSDA — MARY KINGSTON

Dr. Lewis Archibald, centre, displays the Philip S. Christie Award which he recently received from the Nova Scotia Dental Association. On the left is Dr. Wayne Maillet, President of the NSDA, and at right, Mrs. Philip S. Christie, widow of Dr. Christie, in whose memory the Award was instituted.

The University of Toronto's Faculty of Dentistry will be celebrating the Centennial of the awarding of the DDS degree in 1988. To commemorate this historic event, a number of activities are being planned, which will include the recognition of the second Alumnus of the Year on the annual Alumni Day. This will be held on June 10, next.

The second of the Alumni's Limited Edition posters celebrating 100 years of the DDS degree will be released in April and during May, at the Ontario Dental Association's Spring Meeting, the winner of the Faculty of Dentistry's Lottery will be chosen. The lucky winner will receive a trip and accommodations for two to the Second World Dental Conference in Jerusalem, June 26-30, 1988.

Tickets for this draw or any information about any of the Alumni events can be obtained from:

Dr. Barry Korzen,
Director of Alumni Affairs
University of Toronto,
Faculty of Dentistry
124 Edward Street,
Toronto, Ont. M5G 1G6 △

Contrary to the commentary last month in the "Ad Lib" column, the CDA Resource Centre has uncovered the fact that there have been, and are, dentists on the federal government scene in Canada.

At the moment there is an M.P., Dr. Bud Bradley (PC — Haldimand-Norfolk (Ont.)), a graduate of the University of Alberta in dentistry. He has served as a dentist and a Canadian Army officer. He was first elected to the House of Commons in 1979 and was re-elected in 1984. He was appointed Parliamentary Secretary for Supply and Services in October, 1984.

Dr. Orville H. Phillips is a member of the Senate. A native of Prince Edward Island, Dr. Phillips is a graduate in dentistry from Dalhousie University. He is a Second World War veteran who served in the RCAF, 1942-45. First elected to the House of Commons in 1957 as a P.C. Member, he was re-elected in 1958 and 1962. Dr. Phillips was appointed to the Senate of Canada in 1963.

ADDENDUM

A correction should be noted pertaining to the JCDA article in the December, 1987 edition: "Dr. L.E. Van Buskirk, pioneer maritime dentist, was first to use anaesthetic in surgical operation in Canada." The author, Dr. O. Sykora has received new evidence since the submission of the article, presented by Dr. Joseph A. MacDougall of the Department of Anaesthesia, Saint John (N.B.) Regional Hospital.

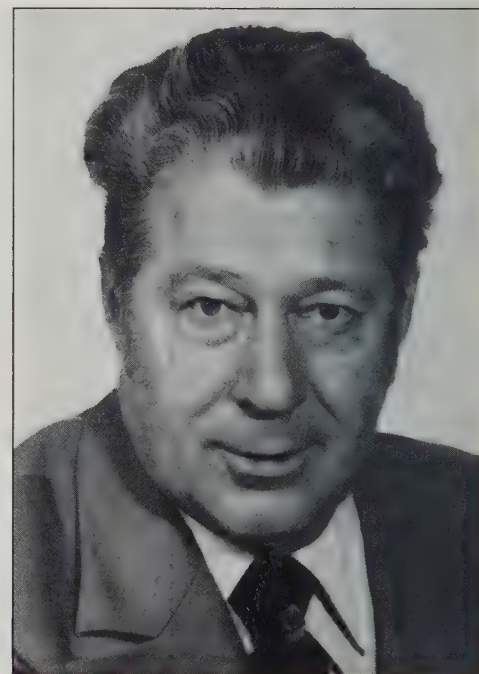
Dr. MacDougall's evidence shows that the earliest use of ether anaesthetic for general surgery in British North America was at Saint John on Monday, January 18, 1847. The surgeon was Dr. Hunter Peters and the anaesthetist was Dr. Cyrus Fiske, a Saint John dentist. △

A special event was held recently in Halifax to honor Dr. Arthur H. Ervin, Professor of Prosthodontics, Dalhousie University, on the occasion of his retirement.

Dr. Ervin had joined the Faculty in 1949, on a part time basis until 1967, when he returned to graduate school to earn an MSc and his Prosthodontics specialty certificate. He then rejoined the Faculty as a full time member.

His excellence in teaching was duly noted, and he received the Faculty Advisor Award in 1981 from the Student Clinicians of the American Dental Association and in 1983, was named Professor of the Year by the Class of '83.

Dr. Ervin is a former President of the



Dr. Arthur H. Ervin

Nova Scotia Dental Association, the Halifax County Dental Society and the Academy of Prosthodontics.

He has also been active in his community organizations and has served as President of the Gyro Club of Dartmouth and the Dartmouth Regional Council of the Boy Scouts of Canada. Δ

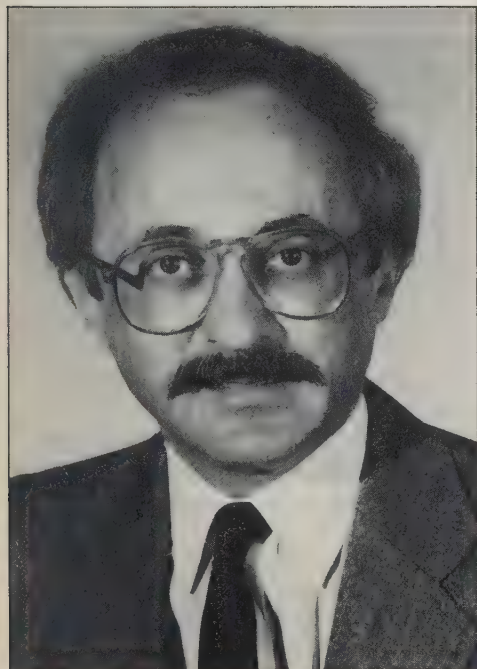
A JCDA editor and editorial have gained international distinction.

The editorial — "Continuing Dental Education, A Matter of Lifelong Commitment" — was written by Dr. Pierre C. Desautels and published in this Journal in August, 1987.

The selection was made in the American Dental Association's Division of Communications which is a publication for dental editors — "Update" — which contains examples of top rated editorials from dental journals around the United States, and occasionally, a foreign one. Dental news items and news releases from the ADA are also contained in the publication.

Dr. Desautels, who is Professor in the field of dental materials and Assistant Dean (Curriculum) in the Faculty of Dental Medicine, University of Montréal, also received an attractive certificate from the ADA to commend him on his exceptional editorial.

Dr. Desautels is one of JCDA's two scientific editors. He evaluates and sends out French-language submissions for refereeing, to determine their merit as possible candidates for publication in JCDA. Δ

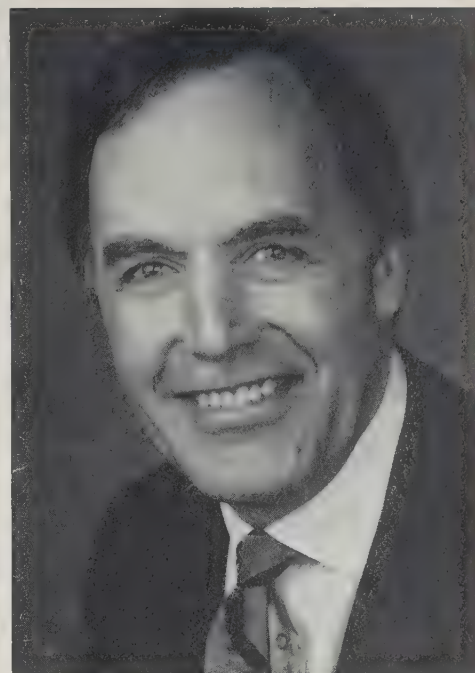


Dr. Pierre C. Desautels

Dr. John Nasedkin of Vancouver, will preside over the 1988 meeting of the American Equilibration Society in Chicago this month. (Feb. 17, 18). The Vancouver prosthodontist is the second Canadian to have held this office in the world's largest organization dedicated to occlusion, the TMJ and related structures.

The Equilibration Society has provided more than \$100,000 in research funding with voluntary contributions from members. This research is specifically selected to have maximum impact on the clinical practice of dentistry.

Dr. Nasedkin is a graduate of the University of Alberta, a Member of the Royal College of Dentists of Canada and regional editor of the Journal of Cranio-mandibular Practice. He is the mentor of two aesthetic study groups in Vancouver and has presented courses on occlusion/TMJ and aesthetics on a world-wide basis. Δ



Dr. John N. Nasedkin

CDA Retirement Savings Plan

Unit values: (Funds are valued weekly)

Fund	Unit values as at	
	December 31, 1987	November 30, 1987
Fixed Income Fund	58.12546	57.02916
Common Stock Fund	12.72665*	123.67190
Money Market Fund	39.29074	38.98173
Balanced Fund	23.78698	23.20733

Interest rates:

Guaranteed Fund Term	*Interest rates as at	
	December 31, 1987	November 30, 1987
1 yr	9.25%	9.25%
2 yr	9.60%	9.60%
3 yr	10.10%	10.00%
4 yr	10.35%	10.10%
5 yr	10.60%	10.35%

(*rates subject to change without notice.)

Total Assets (Market value) of the Plan as of:

December 31, 1987	November, 1987
\$83,606,353	\$80,938,283

For further information:



CDA RSP

Write:
CDSPI
Retirement Services Dept.
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2 Lansing Square
Willowdale, Ontario
M2J 4Z3

or phone, toll-free:
Western and Atlantic Canada
and Ontario Area Code 807
only 1-800-268-5418
Quebec and Ontario, (except Area
Code 807) 1-800-268-3411
Metro Toronto Area 497-7117

* Effective November 6, 1987 the units of the Common Stock Fund were split on the basis of 10 new units for each 1 unit held.

DENTAL HEALTH

Spreading the Word

Over the past few years, the *Dental Awareness Program* has worked hard at educating the public on dental health. With the theme *Dental Health — Good For Life*, the Program strives to make dental health a public issue, to clarify its importance to overall health, and to educate people to understand not only the importance of dental health but also the role of individual dental care.

The growing success of *Dental Health Month* and individual programs such as the *Consumer's Guide*, *What Every Adult should Know About Dental Health* and the recently completed *First Teeth*, demonstrates the CDA's commitment to providing the best possible patient education materials.

The true effectiveness of these materials are in their use. The *Canadian Dental Association* has a lot to offer, and in this issue we are focussing on them. These programs and materials are important. They are the link between the profession and the public, and the individual practitioner and his patient — two key relationships.

A Communicating Office

Attitudes toward dentistry and dental health are often formed in large part by individual experiences with the dental team. Your dental team must work with the patient, not just on the patient. You must actively educate and motivate patients — not only by providing care, but by communicating care: ensuring that what they do and say expresses their concern for the patient's health and well-being.

A better informed patient is also a better motivated patient. An increased sense of awareness dedicates the patient to preventive oral care and getting the most out of your professional services.

An important, but often overlooked, part of patient education is communicating in the office — communicating to patients care and understanding. It starts with having helpful, useful materials in the office — on the walls and available to hand out. This demonstrates an interest

DON'T WAIT UNTIL IT HURTS



If it takes pain to get you to go to the dentist, you're asking for trouble. Dental problems usually exist long before there's any noticeable discomfort. See your dentist for preventive checkups.

DENTAL HEALTH
Good For Life

CANADIAN DENTAL ASSOCIATION

in your patients even when they are not in the chair. And it continues by taking every advantage during the course of a visit to communicate with your patients. Remember, you only see them for a few hours each year.

A good first impression.

The first thing that a patient sees is the front of your office door. Take a look at it and ask yourself what it conveys. What it can convey. A *Good For Life* sticker or colourful poster can make a good impression on a patient or passer-by on the orientation of your practice.

A friendly greeting.

It makes all of the difference in the world. A show of friendship and warmth can

relax a nervous or apprehensive patient, and it lets every patient know that he or she is not just a number.

Talk, listen and teach.

A little time spent talking about a patient's dental health, listening to their questions, and offering informative patient education materials is essential to providing the best possible dental care. Get the whole dental team involved in the process. Your patients are sure to recognize the whole office's dedication to their dental health.

The new DAP catalogue — this month's *Journal* supplement

Turn to the supplement in this *Journal*. It's the new *DAP* catalogue. Take a little time to consider all of the special programs and materials that the CDA has to offer. And order a generous supply for your office. It's a commitment to your patients. And to the *Dental Awareness Program*.

Last Chance

Dental Health Month is just a month-and-a-half away.

And in the *DAP* catalogue, we've provided a last chance to order DHM materials in time for April.

Just look for Bob. He's the smiling face on all of this year's materials. He embodies the success of having learned the way to achieve the best possible dental health. And your patients can learn too with the help of these fun, full-colour items.

And remember, this *Dental Health Month* is extra special. Bob is helping to launch the CDA's **5 Point Prevention Plan**. The Plan represents an official recommendation to Canadians that clearly lists the basic preventive measures that every individual can take to maintain dental health — *and to keep it good for life*.

Don't wait to order. DHM '88 is almost upon us.

Get a supply of materials now. Plan your activities. And in DHM '88 — *Keep Smiling!* △

ROOT SCALING AND PLANING

Bernard Wasserman

Quintessence, Chicago,
160 pages
\$82.00

Scaling and root planing, long considered a basic component of any form of periodontal therapy, receives a wide ranging, clinically-oriented review in this 160 page book by Dr. Wasserman. The text begins traditionally with an overview of fundamental periodontal anatomy, pathology and etiology which is presented with a strong clinical perspective. The author uses this beginning to make the important point, reemphasized and amplified later in a chapter on choice and sequence of treatment, that the case type, based on the degree of fibrosis or inflammation plus the location, degree and configuration of attachment loss relate substantially to the results that can be expected from scaling and root planing. These concepts are further elaborated upon as part of the author's overall philosophy of periodontal treatment, gained over several decades of practice, by the inclusion of a number of case studies, some with forty year followups, that illustrate both the excellent results that can be achieved and, conversely, the limitations of scaling and root planing.

Instrumentation, intra- and extraoral rest positions and sharpening are presented in detail and with great clarity. A comprehensive and carefully illustrated section fully explains the finer points of instrument selection and adaptation to all areas of root anatomy. This section is particularly useful to less experienced clinicians seeking to master the difficult skill of subgingival scaling. Attention is also drawn to those extremely useful but often neglected instruments, the periodontal hoe and file.

Although this book makes an important contribution to its topic, it would have been greatly improved by inclusion of a discussion, with comparison to scaling, of the role and significance of root plan-

ing. It may be an indication of the author's philosophy that root planing, as an entity, is not addressed. The sections on instrumentation, presented from a clinical perspective, would have been enhanced by inclusion of a review with illustrations of current research findings on the effects of instrumentation on the root surface and calculus removal. Similarly, a discussion of the formation and attachment of calculus leading to a more detailed consideration of its detection clinically would add to the scope of the text and assist in appreciating the fine sections on scaling technique. The chapter on periodontal maintenance therapy was disappointingly superficial; I anticipated that Dr. Wasserman would have a great deal to relate based on his experiences as a clinician and lecturer on this cornerstone of periodontal therapy.

This book follows the format of others from Quintessence Books with its large type and numerous high quality colour photographs, which have been carefully selected to elaborate the points made in the text.

Dr. Wasserman has made an important contribution to the subject of root planing. I highly recommend this book to all clinicians, dentists, dental hygienists, periodontists or students engaged in the practice or teaching of periodontal disease. Δ

This book was reviewed by:
Christopher H. Hawkins, DDS, MSc
Assistant Professor
Division of Periodontics
Department of Restorative Dentistry
Dalhousie University,
Halifax, N.S.

THE CLINICAL HANDLING OF DENTAL MATERIALS

B.G.N. Smith; P.S. Wright and D. Brown

1986, 278 pages

The authors of this book have intended that it be read by both undergraduate

dental students as well as post graduate clinicians and approaches the science of dental materials from the clinicians point-of-view and interests.

The format of this book is divided into four major sections plus an appendix. Part I deals with a general presentation of materials, handling characteristics and performance properties. Part II is devoted to the use of materials in clinical procedures which include examination; diagnosis; prevention; treatment of caries; inlays, crowns and bridges; endodontics; complete and partial dentures; orthodontics, periodontology and oral surgery. Part III is primarily a classified list of the materials referred to in Part II and the properties of the respective materials are dealt with in greater depth and detail. Part III is an alphabetical list of proprietary materials which are cross-referenced to those materials dealt with in Part III and the appendix is a compendium of major suppliers of dental materials in the U.K.

It soon becomes obvious to the reader that the format of the book is both interesting and practical. Though the "general properties of dental materials" (Part I) are presented in 18 pages, it would be difficult to consider this book as a text on dental materials science and therefore it must be assumed that the student or clinician has had formal courses in Dental Materials. However, the value of this book is found in Part II which places the emphasis on the respective clinical procedures. In a concise way the reader gets an over-all view of a given procedure without all the distractions of the specific physical and mechanical properties as well as brand names making the text more readable and of greater interest to the dental student. However, should the student or clinician require more detailed information on the type of material mentioned in a given procedure, a reference directs the reader to a specific section in Part III. A very attractive format.

Of equal value, especially to the more advanced student and clinician is the con-

venient cross reference of Brand names, types of materials and suppliers.

Though this book is written for the British audience and some of the materials mentioned may not be available or commonly used in Canada, this book is an excellent recourse and in addition would be a superb complement and supplement to any of the traditional texts on Dental Materials. Δ

*This book was reviewed by:
Dr. Leonard N. Johnson, Chairman
Division of Biomaterials Science
Faculty of Dentistry
The University of Western Ontario
London, Ontario*

STOMATOLOGIE ET PATHOLOGIE MAXILLO-FACIALE

Jean-Pierre Lézy et Guy Princ

*Masson 1987. Paris, France
200 pages, 51 figures*

Cet abrégé de 186 pages réparties en 14 chapitres suivis d'un index et pré-

cédés d'un avant-propos rédigé par les auteurs, s'adresse moins au dentiste généraliste qu'au praticien cultivé qui veut encore augmenter sa culture. L'avant-propos qui justifie le livre, explique aussi son but qui est de rassembler les données anatomiques, cliniques et thérapeutiques essentielles à la compréhension de la stomatologie et de la pathologie maxillo-faciale.

Rédigé en français, par des français et on pourrait dire pour des français, puisque le "stomatologiste" auquel cet abrégé s'adresse essentiellement, est avant tout un médecin, mais qui s'est spécialisé dans la sphère bucco-dentaire et surtout "bucco-faciale", incluant la traumatologie.

Il est de présentation agréable, aéré, avec une typographie qui souligne les points forts. Le langage scientifique est élégant, dense, direct et musclé; les mots bien choisis (ex.: "imagerie"; "mandible empaumée"; cicatrisation dirigée", pour 2ème intention). La documentation surprend par l'abondance des détails et la grande culture des auteurs qui n'annexent cependant aucune liste de références

bibliographiques. Certains schémas sont superflus, n'apportent rien à la compréhension du texte (ex.: figures 2, 21, 23, etc.), ou sont parfois inconfortablement situés (ex.: fig. 4). Il manque aussi un glossaire à la fin du livre pour définir certaines entités à nom propre, rappeler la signification des abréviations employées d'abondance (SADAM, RBMI, MNI, etc.) ou pour ajouter certaines précisions qu'un non-spécialiste ne trouverait que dans un dictionnaire (macrolides, embolisation d'une tumeur, crénothérapie, chrysothérapie, bissac, points de Rilliet et Bartz au cours des oreillons, etc.).

La partie dentaire, fortement négligée, se résume à 2 chapitres (25 pages). Les informations données sont insuffisantes ou sans nuance, les termes utilisés sont souvent démodés (ex.: "dentinites" p. 46) et l'on doit déplorer de nombreux oublis. Les pulpites sont traitées en 18 lignes. Le chapitre "abrasion, attrition, érosion" a été escamoté ainsi que le rôle immunologique de la plaque dentaire dans l'étiopathogénie des parodontopathies etc. . . Certaines notions sur les maladies périapicales sont, à la limite, inexacts par excès de schématisation.

À l'opposé et par comparaison, les volets médicaux et chirurgicaux paraissent exhaustifs.

Les rappels anatomiques nécessaires à la bonne compréhension du texte sont limpides. Certains sujets sont traités d'une manière particulièrement attrayante: les stomatites virales, le diagnostic différentiel des aphtes, les syndromes à déficience génétique présentés avec une bonne description et la date de leur découverte etc. Les stomatites sont intelligemment classifiées d'après le type de lésions élémentaires qui les caractérise.

Les traitements sont toujours abordés avec des détails minutieux et pratiques (ex.: conservation du cartilage auriculaire après arrachement, en nourrice sous la peau mastoïdienne, p. 3). Le point de vue légal est aussi parfois présenté, comme dans le cas de l'évaluation des indemnités pour cicatrices et séquelles après traumatisme (p. 34).

Certains chapitres, enfin, comme le syndrome algo-dysfonctionnel de l'appareil manducateur, les adénopathies cervicales ou les manifestations buccales du SIDA, méritent une lecture car ils n'entrent pas dans tous les livres de référence.

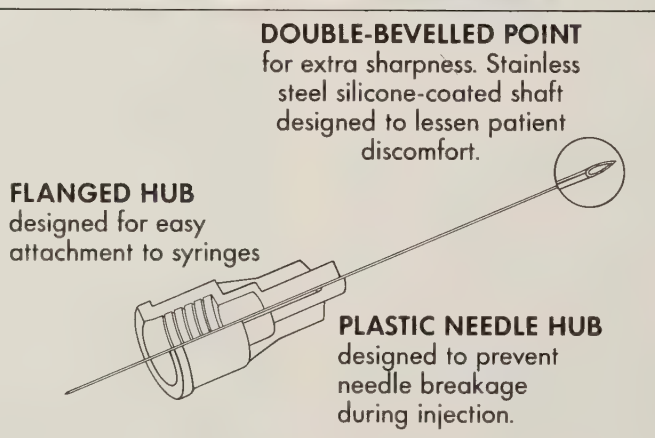
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une culture médicale, cet abrégé n'est pas écrit pour n'importe quel dentiste. N'importe quel dentiste devrait cependant en faire l'achat pour devenir ou rester un médecin-dentiste médicalement compétent et à la page. Δ

*Dr. Christiane Mascrès
Professeur titulaire
Faculté de médecine dentaire
(stomatologie)
Université de Montréal*

HYDROXYLAPATITE IMPLANTS

H. Denissen, C. Marigano and G. Venini

*Ishiyaku EuroAmerica, Inc. 1985
175 pages, 200 colour illustrations
\$42.50 U.S.*

The documented long term clinical success of osseointegrated dental implants was brought to the attention of North American Dentistry at a Toronto Conference in 1982. This seminal event was co-sponsored by the Universities of Goteborg and Toronto, and supported by grants from Swedish industry and the Ontario Ministry of Health. The outcome of this Conference was a profound shift away from old convictions about the poor scientific documentation to support the prescription of dental implants. Bränemark's research had changed the clinical therapeutic scene, and his introduction of a screw shaped unalloyed titanium implant placed *in situ* in two separate surgical procedures, offered the dental profession a reliable analogue for tooth roots. The interval between the two surgical appointments allows for the buried implant to become an integral part of the surrounding bone, that is it becomes osseointegrated. While the precise nature of the bone/pure titanium interface remains incomplete, the long term clinical outcome of the biological response to implant function is one of predictable longevity. The Bränemark work has emphasized the biocompatible qualities of unalloyed titanium as an indispensable ingredient of the osseointegration formula. However it seems logical to presume that other biocompatible materials can perform equally well. Consequently the past few years have been remarkable for the large number of research and anecdotal efforts to justify diverse and alternative implant systems.

This is a well written and well illus-

trated attempt to articulate a case for considering hydroxylapatite materials for achieving an osseointegrated response to dental implants. The experimental work of the University of Florida's Larry Hench with bioglass suggested the feasibility of generating a tight bond between bone and hydroxylapatite. This led this book's authors to the decision that they would develop an endosseous implant mode of hydroxylapatite.

This 160 page book is broken down into twelve chapters which briefly deal with properties and preparation of dense apatite ceramics, include a rather superficial discussion of rat and dog bone response to ceramic tooth roots, and then devote the last five chapters to diverse applications in humans in a variety of clinical locations. This is not a clear-cut "how to" type of text, nor is it a particularly compelling scientific analysis of the clinical efficacy of dental ceramic implants. Inclusion and exclusion criteria for patient selection, precise numbers of patients treated, evaluation criteria and a whole list of traditional research standards are not reported. Consequently, this

book fails to provide the necessary evidence to allow the dentist to prescribe ceramic implants with impunity. It does succeed however in whetting the reader's interest in a very promising implant material.

This reader recommends the book as an enjoyable and stimulating read. It is clear that prosthetic dentistry has entered a new and fascinating era. Δ

*This book was reviewed by:
Dr. George A. Zarb
Professor and Head of Prosthodontics
University of Toronto*

PAEDIATRIC OPERATIVE DENTISTRY

D.B. Kennedy

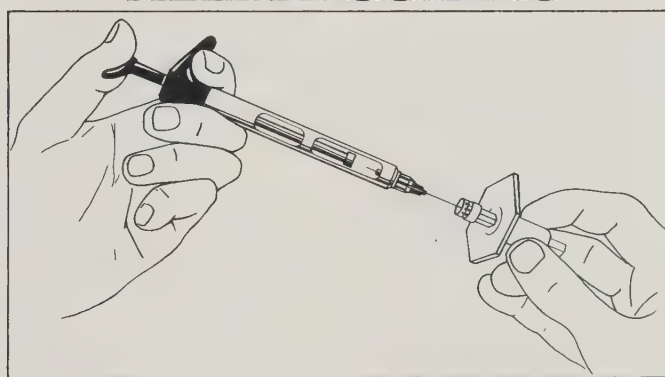
*3rd. Edition, J. Wright & Sons, Bristol
1986
285 pages*

While the practice and study of paediatric dentistry involves much more than restorative dentistry for children, successful performance of operative dentistry is essential to those engaged in paediatric

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dentistry. Kennedy's Operative Dentistry is an excellent handbook on both restorative dentistry and the related topics of dental materials and pulp therapy. The available knowledge is reviewed critically and presented in a manner that can readily be applied by the clinician. For instance, it is refreshing to see the mandatory use of water coolant in cavity preparation questioned. The use of rubber dam is presented in a detailed and practical manner which encourages the clinician to make this valuable technique the standard of practice. The description of specific restorative techniques is accompanied by discussions of the diagnostic and treatment planning considerations required. The technical and practical are not discussed in isolation of each other. The classical material describing preparations for class I, II and III cavities to receive silver amalgam is presented in a clear and well illustrated manner. Also the management of lesions in anterior primary teeth including the often troublesome class IV preparation, the jacket crowns and resin post & core for nonvital teeth are described.

The chapter on dental materials has been revised to provide an up-to-date review of the available restorative materials. The use of posterior composites and the "mercury hazard" of silver amalgam are discussed with the author finding the use of a modern high copper alloy to be preferred. The chapter on preventive aspects of paediatric restorative dentistry provides a detailed discussion of the principles and techniques of fissure sealants with clinical evaluation. The excellent chapter on stainless steel crowns includes a good discussion of the indications for this paediatric procedure.

Of particular interest are the chapters on the Principles of Pulp Therapy, Diagnosis of Pulp Pathology and Pulp Therapy Techniques which cover paediatric pulp problems in a very comprehensive manner. It should be noted that both the dilute formocresol technique and glutaraldehyde are discussed.

This book is an excellent blend of the practical and the theoretical presented in a manner very useful to both the clinician and the student. The third edition has been improved to keep this well-known handbook up-to-date with current developments. Δ

This book was reviewed by:
Dr. W.H. Feasby
Div. of Paediatric Dentistry
Faculty of Dentistry
University of Western Ontario
London, Ontario

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with plenty of this

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materials.

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Journal and *place your*

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CANADIAN DENTAL ASSOCIATION

Dental Practice Management

La gestion du cabinet dentaire

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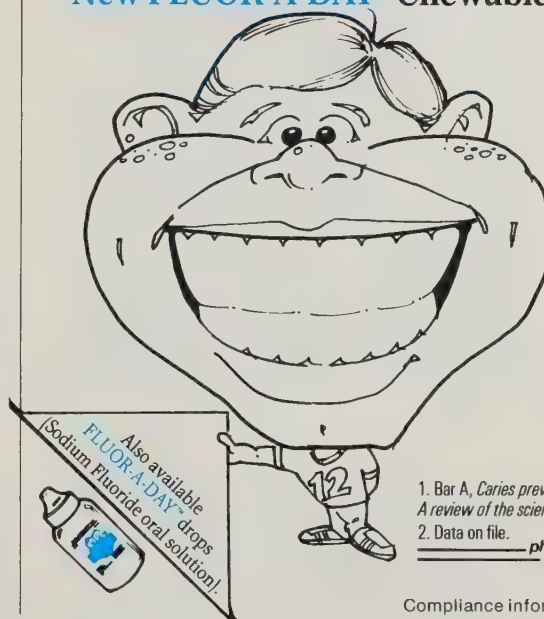
New Acquisitions

- Jackson, James B. and Hill, Roger K. *New trends in dental practice valuation and associateship arrangements*. Chicago: Quintessence Publishing Co., 1987, 258 p.
- World Health Organization. *Oral Health Surveys. Basic Methods*. 3rd Edition. Geneva: World Health Organization, 1987, 53 p.

One copy of the above articles is available at no charge from the library to all CDA members. Non-members will be charged \$5.00. This bibliography was generated with the help of MEDLARS, a computerized information retrieval system for the Health Sciences field, which has been operational in the library since February 1982.

La bibliothèque de l'ADC offre gratuitement à ses membres et pour \$5.00 aux non membres une copie des articles au-dessus. Cette bibliographie a été préparée avec l'aide de MEDLARS, un système informatisé de recherches bibliographiques pour les sciences de la santé. Ajouté à la bibliothèque en février 1982.

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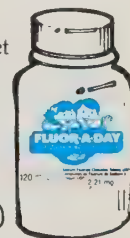


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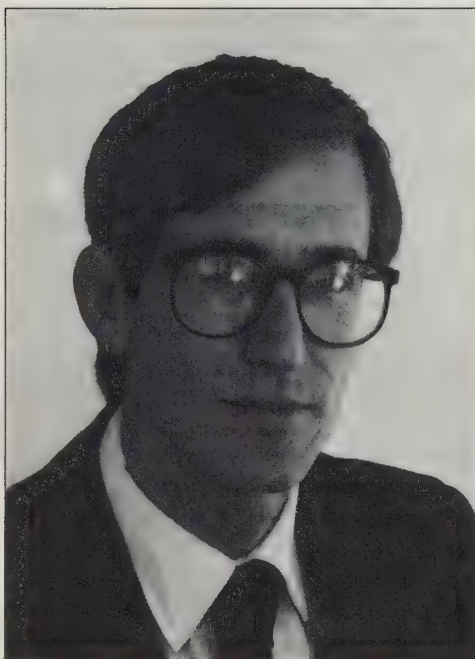
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UNDERSTANDING COMPUTER HARDWARE

*David M. Kogon, BSc, DDS, MBA
Willowdale, Ontario*

Dr. David M. Kogon, a graduate of the University of Western Ontario's Faculty of Dentistry in 1980 was in private and public practice until 1984. Becoming aware of the need for the application of business skills in dentistry he enrolled in the Master of Business Administration program at York University. Upon graduation in 1986, he acted as an independent consultant. He is now a health care consultant with William M. Mercer Ltd.

Many quality dental management computer packages are presently available for Canadian dentists from a multitude of vendors. With the price of these systems lower than ever before (system prices range between \$4,000 and \$25,000), the purchase of a packaged, or "turnkey", system should now be a viable consideration for almost every dentist. It is, therefore, important to have an understanding of the essential hardware which would be included in all com-



David M. Kogon, BSc, DDS, MBA

puter systems. This article describes some of the major components of a basic system, such entities as memory, disks, microprocessors, video displays and printers. A discussion of the principal

subdivisions within each system component is also given.

Memory

The central function of a computer is to manipulate and operate on data. Instructions controlling the processing of this data (known as software) are stored in the computer's memory. There are two basic types of memory, main memory (also known as internal memory) and secondary (or auxiliary) memory. Before discussing these types of memory, it is useful to understand the form in which information is stored and utilized by the computer.

The computer's central processing unit (CPU), the powerful and complicated "brain" of the microcomputer, has the ability to work only with binary digits, that is zeros and ones. It can be viewed as consisting of thousands of switches, with each switch set in one of two positions or states, either 0 or 1. The information associated with this two state switch is referred to as one bit of information. Bits are normally aggregated into 8-bit groupings called bytes. One character, that is one letter or one number,

requires 1 byte of memory storage.

Memory may be viewed as consisting of an ordered sequence of bytes. This ordering permits one to identify (or address) particular bytes in memory by assigning an integer to each byte. The Intel 8088 microprocessor (one type of CPU, see below), for example, has the ability to identify 1 M (megabyte; a M equals about 1,000,000 bytes) of main memory.

Because main memory is directly accessible to the microprocessor, access to information stored therein is very fast. Physically, it consists of semiconductor chips known as random access memory (RAM). Today, most microcomputers have a minimum of 256K (kilobytes; a K of memory equals about 1,000 bytes) of user-available main memory locations, with 640K being the maximum possible user-available main memory on IBM-PC/XT compatible microcomputers.

Main memory is said to be volatile. That is, when the power to the computer is turned off the information stored in the RAM is lost. To get around this deficiency as well as the limited capacity of main memory, microcomputer systems normally include some form of secondary memory, generally floppy disks and/or hard disks. This memory is non-volatile so that when the power is turned off no information is lost. It is important therefore, that all required information be copied from main memory to auxiliary memory at regular intervals so that important information is not lost as a result of an unexpected power outage.

Disks

Floppy disks (also known as diskettes) are the most common form of secondary memory. Diskettes may be single or double sided (SS or DS), single, double or quad density (SD, DD or QD), with double sided, double density being prevalent. Five and one-quarter inch diskettes are the norm. Three and one-half inch and eight inch diskettes are also available but do not appear to be gaining acceptance in the marketplace. Each 5¼ inch DSDD diskette can contain up to 360K of information (the equivalent of about 120 pages of typed text). These diskettes cost about \$2.00 each, making them a very cheap form of information storage. Floppy disk drives, required to access information stored on the floppy disks, cost about \$150 each.

Hard disks, like floppy disks, act as a storage medium for programs and data. They differ from floppy disks in that they can contain much more information, they can access the data much faster and they are generally non-removable. Typical

access time for a floppy disk might take 300 ms (milliseconds; a ms equals 0.001 second) and a hard disk unit 50 ms to access a given piece of information, while a semiconductor main memory might require only 0.5 μ s (microseconds; a μ s equals 0.000001 second). Thus there is a 600,000 fold reduction in information access time when comparing RAM storage with floppy disk storage. This is one important reason why computer users have demanded larger and larger main memory storage for their systems.

Ten, twenty and thirty megabyte hard disk drives are commonly available. Even larger capacity hard disks (400M and more) can be obtained if desired. A twenty megabyte disk can store the information equivalent of about 55 DSDD floppy disks. Current cost for a 20M hard disk drive is about \$500. Most computer systems for dental offices will require one floppy disk drive and one hard disk drive for data storage.

Microprocessor

Located on the system board is the heart of any microcomputer — its microprocessor (also known as central processing unit).¹ This single chip, although small in physical size (about 2" by ½" for the Intel 8088), controls all major functions. Some characteristics of microprocessors include the basic system clock rate (the speed at which basic operations are processed), the internal datapath width (controlling the number of pieces of binary information (bits) which can be transferred at one time within the chip itself), the external datapath width (controlling the number of bits of information which can be transferred at one time between the chip and other chips or other external units), the direct memory addressing capability, etc.

There are many microprocessors on the market today. The type utilized within the machine determines its compatibility with other machines. In other words, microcomputers with specific microprocessors will often not run programs designed for use on microcomputers with different microprocessor chips. This is important to keep in mind if a particular software program is required to run on your office computer. Generally, therefore, it is best to decide on which software is required prior to determining exactly which type of hardware should be purchased.

By far the most commonly used microprocessor found today in a business setting is the Intel 8088. It was selected by IBM to use in their PC and XT models. The entire Intel family of microprocessors

now power over nine million personal computers.² Due to their wide acceptance and popularity, a great expanse of software (programs) is available. Any non-IBM machine based on these chips is said to be IBM compatible or an IBM clone.

Another Intel chip, the 8086 is functionally identical to the 8088 but has an external datapath that is twice the size (16 bits) of that found in the 8088. Many computer manufacturers have opted not to utilize this somewhat more powerful chip because the vast majority of hardware on the market today is compatible with the smaller 8-bit external datapath format found in the 8088.

Other upward-compatible microprocessor chips are now being incorporated in later model microcomputers to replace the 8088 and 8086 chips. These include the 8086-2, 80186, 80188 and 80286. Although they do not represent a new generation of microprocessor, they do contain enhancements such as a wider external datapath (allowing more information to be transferred at one time), a faster clock rate (decreasing the time taken to perform basic operations), significantly reduced costs (obtained by squeezing more functions onto the one chip thereby reducing the total number of chips required in the microcomputer), etc. (Table 1).³

The latest generation of Intel microprocessor chip, the 80386, is now being utilized as the base around which future IBM and IBM compatible microcomputers will be made. (Compaq has introduced the Deskpro 386 model based on this chip.) The internal datapath is twice as large as its predecessors (32 bits) and its clock cycle is faster (16 MHz). Since more information can be processed during each clock cycle, and each clock cycle is faster, the result is a significantly more powerful chip. As well, up to approximately 16 M of RAM may be addressed, a significant increase over the 640K memory barrier of the 808x/8018x based machines. (Motorola Inc. has announced a rival 32-bit microprocessor, the MC68030. This chip packs 300,000 transistors on a sliver of silicon.)

Multi-processing and multi-user environments are supported by the new Intel chip. Multi-processing is the ability to perform many tasks simultaneously on a single machine. Multi-user implies that many users may be accessing the machine through multiple terminals concurrently. These are without a doubt major advances, previously only found on mini-computers and main frame computers, and as such will likely herald the standard for the next generation of personal computer.

TABLE 1

The Intel 8086/8088 Microprocessor Family

Microprocessor	Internal/External Datapath (bits)	Maximum Clock Rate (MHz‡)	Other Features
8088	16/8	5	used in IBM-PC/XT models
8086	16/16	5	functionally identical with the 8088
8086-2	16/16	8	but 15 per cent more powerful
80186	16/16	8	identical to 8086 but has higher clock rate
80188	16/8	8	contains more functions on chip — twice as powerful as 8086
80286	16/16	10	functionally identical with the 80186 — slightly less powerful than 8086
80386	32/32	16	software compatible with previous chips — 6 times more powerful than 8086 — has the ability to access up to 16 million bytes of main memory
			new generation microprocessor — multiprocessing, multiuser supported

‡ MHz = megahertz; a MHz equals 1,000,000 cycles per second

Video Display

Video displays (also known as monitors) are required to enable the user to see what information is being fed in as input to programs and to see the program produced results. Typically, 25 lines with 80 characters per line are visible. The characteristics of a display depend on two factors, namely the kind of display and the type of video card that is present. A video card is an adapter which acts as an interface between the computer and the monitor.

IBM and IBM compatible computers can utilize one of the following video cards: monochrome display adapter, colour/graphics monitor adapter, monochrome/graphics (Hercules) adapter, or enhanced graphics adapter (EGA). The monochrome display adapter can produce high resolution text (in monochrome only), but does not have a graphics capability. For both text and graphics display (in colour or monochrome), the colour/graphics monitor adapter can be used. The problem, however, is that the text and graphics are shown in only medium-resolution (exhibiting a more dotted appearance). The monochrome/graphics adapter solves some of the deficiencies of the above two cards by providing (in monochrome only) both high-resolution text and high-resolution graphics. If high resolution colour graphics and text is desired, then an enhanced graphics adapter paired with a RGB (red/green/blue) colour monitor is required. This combination of card and monitor is expensive (about \$1,400).

Monochrome displays come in two major types: IBM-type monochrome displays and composite monitors. The IBM-type monochrome display is a high resolution monitor that is designed for use with a monochrome display adapter or a monochrome/graphics adapter. When used with a colour/graphics adapter, the high quality and clarity of an IBM-type monochrome screen is sacrificed.⁴ A composite monitor produces medium resolution text and graphics when used in tandem with a colour/graphics monitor adapter. Note that non-IBM compatible machines cannot utilize an IBM-type monochrome display so that one must therefore settle for medium resolution capability.

Colour displays can either be RGB monitors or colour composite monitors. The former, when combined with an EGA card, yields high resolution colour graphics and text. The latter, when combined with a colour/graphics adapter, produces a medium resolution picture somewhat better than the clarity of a colour TV set.

Those users who will be viewing the monitor for many hours daily (as will be the case for receptionists in dental offices) or doing a lot of wordprocessing will find the added clarity of a high resolution set-up well worthwhile.

Printers

Printers are useful adjuncts to computer systems because they produce hard copies of selected information, such as patient billing information or recall

notices, residing in the computer memory. Two major categories of printers are on the market, dot matrix printers and letter quality printers.

Letter quality printers produce high quality text, similar to that produced by a typewriter. To offset this advantage, they are generally slow, can't change type-faces (fonts) on command, usually have no (or only crude) graphics capabilities and don't come already equipped to handle continuous sheets of fanfold paper (although the tractor feed mechanisms are usually available as an optional extra).

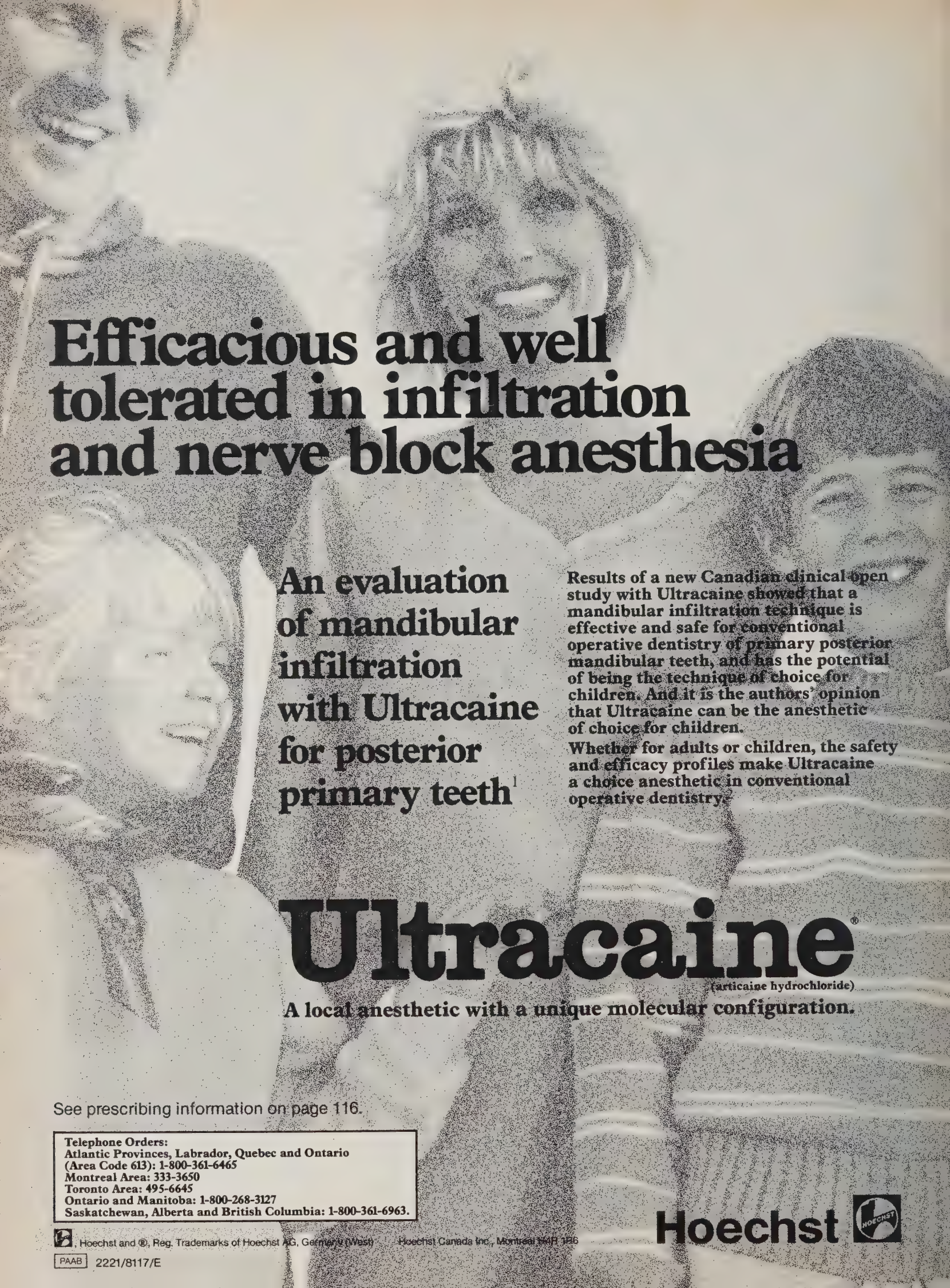
Dot matrix printers produce a somewhat lower quality text by using a row of tiny vertical pins to form each character. These printers, as well as being much faster than letter quality printers, usually have the added ability to produce many different fonts, such as italics, compressed print, double width print, bolding, pica, elite, near letter quality (NLQ), etc., automatically. On many recent dot matrix printers, the NLQ mode is almost as good as that found on letter quality machines.⁵ For most purposes, dot matrix printers are preferable over letter quality printers because of their versatility, faster printing speeds, and lower costs.

Conclusion

Although present estimates indicate that only about five per cent of Canadian dental offices are computerized, this percentage is bound to rise at a quick pace in the near future as microcomputers continue to become smaller, cheaper and more powerful. The dentist consumer must gain some understanding of computer hardware in order to make a knowledgeable choice. For those practitioners unwilling or unable to take the time required to understand the basics of computer hardware, gaining the aid of an outside consultant may be of value in helping to determine which system components fit best with the practice's needs, both at present and in the future. Δ

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David M. Kogon, BSc, DDS, MBA
Willowdale, Ont.

The Current Market-Place

According to a recent survey by Evans Research Corp., the vertical markets, that is markets for specific industries and professions such as physicians, lawyers, pharmacists and dentists, "are getting a lot more attention from software developers these days as the horizontal markets for such generalized products as electronic spreadsheets and word-processing programs approach saturation." As a result, there are a multitude of vendors vying today for a piece of the action in the dental market-place. However, the simple fact that they have identified a market need does not imply that this need is being successfully met. Their study shows that professionals are resistant to purchasing computer systems because:

- 1) "it is often difficult to make a sales appointment" because practitioners seldom have free time when at the office
- 2) "unqualified and incompetent computer salesmen" cannot explain the

virtues of their systems in a professional manner

- 3) professionals "are cautious, careful decision-makers", so "it is not easy to prove the benefits of computers"
- 4) computers are viewed by some as "anti-intellectual, and there are fears (that) technology will undermine the client's idealized view of the professional."¹

An American national survey² conducted in 1985 showed "that there is considerable confusion among dentists about the usefulness and benefit of using a computer system in practice management." The authors concluded that "this results from the relatively minimal exposure dentists have had to computers up to now and, more importantly, from their lack of training in using managerial information."

If the observations of the American survey can be extrapolated to the Canadian environment, the results of both surveys help to explain why only 5 per cent of Canadian dentists are using microcomputers in their practices. Hopefully, the

information which follows will help practitioners understand the potential of computerized dental management systems and maximize the likelihood of making the best possible software purchase decision.

Steps in the Purchase Process

Many articles have been written which give guidelines in selecting a computer system.³⁻¹¹ One of the most important steps in selecting dental system software involves deciding on the specific requirements that the system must be able to handle now and in the future. Time spent effectively at this stage will help considerably to narrow down the number of viable alternatives and thus make the purchase decision much easier. For example, a one provider office may require a relatively modest software and hardware package providing a single user capability only. Even though this system may be impossible to modify (at a later date) to become a multi-user, multi-tasking system, this would be of little concern if the office is likely to maintain the status quo in the

foreseeable future. Single user systems can be significantly cheaper to purchase and may be all that is required. On the other hand, a group practice with several providers (dentists, hygienists, lab technician, etc.) would most certainly be able to make use of multi-tasking, multi-user features and should thus restrict shopping to systems that meet these requirements.

Another important consideration is the ability of the computer to interface (work with) or independently run other proprietary software programs (such as Lotus 123, WordPerfect, dBASE III, etc.). If this is demanded, then strong consideration must be given to hardware that is IBM or 100 per cent IBM compatible utilizing DOS (Disk Operating System), since most business software is produced to run on these machines and often will not run on machines with different operating systems (or on machines utilizing microprocessors, which are not part of the Intel 8088 family).

In this report, two IBM compatible dental management systems, identified as "x" and "y",* have been reviewed. Software on the market today covers a large range of complexity and price. These particular systems are priced towards the low-middle range, and cover a broad range of complexity. This report is intended to serve as an introduction to what dental management software can do, and as an aid in evaluating other software. The discussion of special features and conveniences can be used to highlight aspects that you can watch for while testing out other software packages. As a further aid, **Table I** can be used as a checklist for evaluating other programs.

Functions

All dental management systems contain certain key functions which form the basis of its operation. With today's state-of-the-art, these functions include patient registration and record maintenance, billing (accounts receivable) and patient recall.

More extensive software includes special features in addition to the basic functions. These features can include such items as medical history alert, the use of multiple fee schedules, interfacing with general accounting functions such as general ledger/accounts payable/payroll, integrating with word processing, spreadsheet and database programs, treatment plan interface, security levels restricting program access, inventory control, patient scheduling, detailed prac-

tice analysis reports and special demographic listings to further aid in practice management, audit trail, mailing labels, memo codes, laboratory reporting, installment contract plans and automatic dialing of patient recalls.

Basic Functions

Patient Registration and Record Maintenance

This portion of the program permits the entry of new patient data or the editing/deleting of data previously entered. The program automatically prompts for the usual information such as name, address, telephone number, employer, insurance carrier and vital statistics. Whenever required, the information can be retrieved and displayed on the screen. Programs should allow multiple patients within one account, patient names and addresses different from account and the ability to search data by either name or account number.

Billing (Accounts Receivable)

The computer can print out patient bills, either in monthly batches (cycle billing) or individually, so that the patient may be presented with the statement before leaving. Some programs allow user changeable dunning messages (overdue account messages) to be printed on patient invoices based on account aging (30, 60 and 90 days old). Programs may also permit acronyms to be entered in place of the fee code (for example an "A" could represent an amalgam fee code). This feature helps prevent transcription errors from patient charts and speeds up data entry.

At the user's discretion, the patient's insurance carrier information can be filled on pre-printed forms or forms generated by the computer on blank paper. Many software packages "automatically coordinate benefits between two or more insurance companies and consolidate all insurance forms for a given carrier so that they can be printed (and mailed) at one time."⁴ Insurance company and patient aged accounts receivable reports may be produced on demand.

Patient Recall

A major area of interest to most practicing dentists is patient recall. Given the competition for patients, an effective recall system is becoming more and more important for a successful practice. A computer system can help in recalling patients in a variety of ways. For example, patients are automatically placed in the recall system at a user-defined period after the initial examination, and tele-

phone recall lists, recall notices and mailing labels can be generated to make patient notification easier. If the software has an integrated word processor, then personal reminder notices, including such information as patient name, recall date and services to be performed can be generated. Some systems will automatically track the number of attempted patient contacts not culminating in an appointment.

Special Features

Medical History Alert

This feature flags any special medical condition or premedication requirement when the appointment is being scheduled so that the appropriate actions can be taken.

Multiple Fee Schedules

This allows multiple providers in the office to utilize different fee schedules for the same procedure codes — a feature especially useful in offices where both general practitioners and specialists will be using the dental management software.

Integrated General Accounting Programs

Some dental management packages have various accounting packages that are integrated with the basic software. For example, an integrated general ledger (G/L) would allow a clinician to maintain a full set of books in-house. Income statements and balance sheets by provider and by practice could be produced. When available, these packages are often purchased for an additional charge. The alternative to an integrated general accounting package would be a proprietary package (such as Bedford Accounting or BPI). The disadvantage of utilizing the latter is that information contained in the statements produced by the dental management package could not be accessed directly and would thus have to be entered manually for use by the proprietary package. On the other hand, most proprietary packages are very comprehensive, easy to use and can be purchased at reasonable prices. For automated payroll and cheque issuance, accounts payable (A/P) packages are available on some systems.

Integrated Wordprocessing, Spreadsheet and Database Programs

This feature permits the merging of information contained within the dental management system with specialized application software programs. For

*The author will identify these systems on request.

example, a word processing interface could allow a letter to be merged with fields on account or patient records. Once again, one alternative to using an integrated package would be to purchase a proprietary package and manually enter the required data as obtained from the dental management package.

Integrated Treatment Plan

Treatment planning is limited on many systems to filing a pre-treatment insurance form. However, much more is possible. During treatment planning a proposed schedule of treatments is entered into the computer. Fees are automatically entered but can be overridden if necessary. During the case presentation, all treatment that is agreed upon is entered into the computer as "accepted". When a procedure has been completed, an "accepted" treatment becomes a "completed" treatment. The treatment history and accounts receivable files are then automatically updated.¹⁴ It is possible to search the files for patients with accepted treatment plans who are not yet booked for an appointment.

Security Levels

In order to prevent unauthorized viewing or tampering, passwords may be required to restrict access to program modules. Program access to staff members can thus be limited to those areas in which they work.

Inventory Management

Inventory is automatically reduced by treatments requiring materials. When materials are received, the material type and quantity is input to update stock levels.

Patient Scheduling

The computer can schedule appointments and print out a daily schedule for the practice as well as individual day sheets for doctors and hygienists. It can alert doctors to health or medication problems. "Generally, if a scheduling module is used, then a multi-user [or networking] system must be utilized, since a screen must usually be available for this specific function. Otherwise, there would be too many interruptions of other functions by the scheduling routine which must be accessed repetitively and sometimes constantly throughout the day."¹⁵ Some schedulers have the ability to maintain short notice call lists.

Practice Management Reports

The computer can prepare reports on such subjects as overdue receivables,

productivity of individual doctors and hygienists, volume of various procedures performed and revenues derived from them, referrals, cash flow, patient demographics, and other topics of interest to the practitioner.

Audit Trail

"Some systems provide a companion report to the daily journal. This is the audit trail report which shows all deleted transactions. As the name implies, it is an important part of maintaining the audit trail of the system so that there is a record of all deleted transactions."¹⁶ This helps protect the practice against embezzlement and also facilitates catching and correcting honest errors.

Mailing Labels

Patient mailing labels may be printed based on appointment or recall date range or in entirety for the purposes of sending a bulk mailing to all patients in the practice. Insurance company labels may be printed for all companies or specific ones.

Memo Codes

A number of special memo codes can be created and maintained on some systems. These codes can, as required, be included on each patient record. They may be used for a variety of purposes including medical alerts, special financial arrangements, appointment preference times, referring doctor name, credit risk information, treatment stage, etc. Reports can be created by extracting account or patient information with specific memo codes.

Lab Reporting

This module maintains lab invoices and warns of duplicate billings or unbilled prostheses.

Installment Contract Plan

Installment contract plans allow the patient to pay for rendered dental treatment over a period of many months. Monthly billing (including interest to be paid) and reports of all patients who have missed their monthly financial obligation can be generated. The installment plan should be modifiable as and when required. The new monthly payment and date of final payment would then be determined. Or conversely a date of final payment may be redetermined given a new payment schedule.

Automatic Dialing of Patient Recalls

Some software packages are compatible with memory resident programs (such

as Borland International's Sidekick program) in order to allow phone number lists to be automatically dialed for recall patients.

Conveniences

When evaluating any software program, it is important to consider not only what the program can do but how "user-friendly" it is — how much help it provides the nonexpert user. Help takes the following forms:

Documentation/Reference Manual —

The reference manual usually has two parts: operation and reference. The operation section introduces the software program, describes what equipment is needed to run it, how to start it, and basic operation. The reference section lists the various options available and what results they produce.

On-line Help — Since it takes some time to become proficient with all the software operations in a dental management system, some programs try to help the beginner by including on-line help. To get this help a specific function key is normally pushed. Information about the options available to the user is then displayed on the screen.

Tutorial — A self-paced operator training program. It is usually computer interactive, i.e. training actually takes place on the computer.

Hot-line Number — If the reference manual and on-line help are not sufficient to resolve a problem, then many vendors provide a toll-free 800 number for assistance.

Training — This includes training personnel when you convert from the manual to the automated system. How many days of training will be provided and where? How do you go about obtaining training for new personnel in the event of staff turnover, and is there an additional charge?

Recommendations

If, after considering your present and future practice management demands, you decide to go ahead with the purchase of hardware and software to meet these demands, then it is important to have several vendors demonstrate their systems in detail. Get a list of all the people who have purchased the system within some specified geographic area and contact as many as possible in order to determine the general level of satisfaction with the system. Do not simply contact those users whose names appear on a "short

list'' of happy clients provided by the vendor. Try to obtain a complete listing of system users, or at least a random pick of names from a complete list.¹⁷

Examine the firm's history in order to determine that the company will still be in existence several years hence in order to provide you with the support you need and any updates which may appear from time to time.

Use the table and the text discussions as a guide. Make sure that the software you are considering has both the basic and special features that you require. But do not insist on every nicety possible, unless you are willing to spend thousands of extra dollars.

“X” System Basic Functions

The “X” system is a single user, IBM-compatible package designed for use in the small to medium size office. It can be networked so that several computers (smart terminals) may share a common printer or hard disk. In the version tested (March, 1987), the number of providers is limited to a maximum of two dentists and two hygienists. (The vendor states that a new version should be ready shortly which will accommodate four dentists and four hygienists.) It contains all the basic functions of a dental management system and carries out the tasks adequately.

Automatic entry of default patient information (such as city, province) and default charges (as a function of procedure code) is provided. This helps reduce the time required for data entry. The recall system provided works effectively. It places patients in the recall system based on the individual's “recall time factor” and the date of the last examination. It would have been helpful to allow the user to set a default system value that would automatically be entered but which could be changed when warranted. At present no default value is set. Blank paper is used for all printed output so that special forms are not required. (A recent enhancement now permits the use of pre-printed standard dental claim forms. This is desirable since some insurance companies insist on the use of pre-printed standard forms and will not accept facsimiles. As well, the printing time per form is greatly reduced since only the variable information is being entered.)

Error trapping is the ability of the program to detect data input errors and reject acceptance of spurious data. The more error trapping that exists, the better the quality of the database (and subsequently the reports) will be. The following are

TABLE I

Features of the dental management software packages evaluated.

Few practices would need all the features listed here; extensive programs provide even more features than are listed. In the column, * means yes, — means no.

FUNCTIONS	“X”	“Y”
patient registration and record maintenance	*	*
billing (accounts receivable)	* (Note 1)	*
post-dated cheques	*	—
optional automatic calculation of finance charges on overdue accounts	— (Note 2)	*
cycle billing	*	*
dunning messages	—	*
acronyms generate fee code	—	—
coordinate benefits between several insurance carriers	—	—
patient recall	* (Note 3)	*
track number of contacts made	*	—
medical history alert	*	*
multiple fee schedules	—	*
software interfaces		
general ledger	—	—
accounts payable	—	—
wordprocessor	—	— (Note 13)
spreadsheet	—	—
database	—	*
integrated treatment plan	*	—
security levels	—	— (Note 14)
inventory management	—	—
patient scheduling	*	— (Note 15)
double booking	*	—
find next available appointment at certain time	—	—
find next available appointment on certain day	—	—
default block out of hrs/days not in office	— (Note 4)	—
schedule certain procedures for specific times/days	—	—
user-definable time unit	* (Note 5)	—
short notice call list	—	—
practice management reports		
collection by type (cash, cheque, insurance)	—	*
collection by producer	* (Note 6)	*
account aging report	*	*
insurance aging report	—	*
user-definable practice analysis reports	—	*
audit trail	* (Note 7)	*
mailing labels	* (Note 8)	*
indexable, user-definable special memo codes	—	*
lab reporting	—	—
installment contract plan	—	* (US\$400)
supports automatic telephone dialing of patient recalls	—	*
CONVENIENCES		
on-line help	—	—
tutorial	—	*
hot-line number	* (Note 9)	* (Note 16)
training	8 hours provided	—
additional training	\$250/day	—

TABLE I (continued)

OTHER

single user version	* (\$4,900)	* (US\$2,895) (Note 17)
multi-user, multi-tasking version	—	* (US\$3,895) (Note 17)
networking	* (Note 10)	— (note 18)
monochrome	*	*
colour	*	* (Note 19)
software support cost	no charge	US\$345/year
cost for enhancement level		included in software
revisions	no charge	support charge
# packages sold to date	16	157
# years actively marketing package	1½	6
minimum hardware requirements	IBM-XT or 100% compatible 256K main memory 1-360K floppy disk 20 M hard disk 9½" carriage with compressed print (Note 11)	IBM-XT or 100% compatible 256K main memory 1-360K floppy disk 20 M hard disk 9½" carriage printer
maximum number of patients	limited by hardware (Note 12)	limited by hardware (Note 12)
maximum number of providers	2 Dentists/2 Hygienists	100
operating system	DOS 2.0 or higher	DOS 2.0 or higher (single user) IBM or SCO XENIX (multi-user)

JUDGMENTS (5-EXCELLENT 4-VERY GOOD 3-GOOD 2-FAIR 1-POOR)

documentation/reference manual	2	4
ease of learning	3	3
ease of use	3	4
features	2	4

Key to Notes

- 1 - provides the possibility for a note to be displayed on the billing screen. Limited to one insurance provider per patient.
- 2 - system allows adjustment to charges, but does not automatically calculate finance charges.
- 3 - provides the possibility for a note to be displayed on the recall screen. This note could be used as a medical history alert.
- 4 - it is possible to simulate the blocking out of times when a provider is not in the office by entering a dummy patient appointment at the appropriate times.
- 5 - time unit set by vendor at either 10 or 15 minutes but is not modifiable by the user.
- 6 - provided for dentists only.
- 7 - daily summary includes all transactions entered.
- 8 - system will print batches of labels based on the first initial of the last name
- 9 - support provided 9-5 weekdays with a non-toll-free number.
- 10 - several smart terminals (microcomputers) can share a common printer and/or hard disk.
- 11 - vendor packages software with Olivetti M24 microcomputer.
- 12 - each megabyte of hard disk storage will allow the complete patient history for a one year duration for approximately 1000 patients to be kept on-line.
- 13 - system creates data file for use by an external wordprocessing package. The vendor supports Wordstar (US\$195). Xenix users must create a DOS partition on the hard disk.
- 14 - password is required to change system options and to delete transactions.
- 15 - appointment information is maintained by the system and used to produce day sheets for each operator/operator.
- 16 - support 9-5 weekdays with a non-toll-free number. Emergency "after hours" service is provided on weekdays and weekends up to 10 pm.
- 17 - requires the Ryan McFarland COBOL RUNTIME software at a cost of US\$190.
- 18 - vendor states that networking will work but is NOT supported.
- 19 - color only available for multi-user, multi-tasking version.

some examples where further error trapping in the program would be of benefit:

- In the billing section, the tooth number is properly checked for validity (for example, an attempt to enter tooth number 99 is disallowed), however, in the treatment plan module the same check is not carried out.
- During the patient registration phase, birthdays after the present date are accepted. This is obviously incorrect and should be rejected by the program.
- Letters and other non-numeric symbols can be entered for the telephone number, a field where only numbers should be accepted.
- In the billing section, the number of tooth surfaces required to be entered is appropriately modified as a function of the procedure code but the actual letters corresponding to the tooth surfaces are not checked for validity. Thus for example, a "K" may erroneously be entered and accepted in place of an "L". It would be helpful if only valid tooth surfaces, such as V L M D O I, were accepted. Further checking could be carried out to ensure that valid tooth surface characters are not entered twice for any one procedure code.

Several menus have built-in default values. For example, the option zero (which in some instances signifies "Return to the Main Menu") may be preset as the default. This means that simply entering <Return> would have the same effect as entering <0> followed by <Return>. Having defaults used in this manner is good since the number of keystrokes required is reduced. However, it is important that the user is made aware of the default value by having it clearly indicated on the screen. In many cases this has not been done.

Another inconsistency with the program menus is that on occasion characters other than the valid options are accepted and acted upon as if they were one of the allowable choices. For example, the mailing label module has two valid menu choices, zero and one, but characters other than the two legitimate alternatives are accepted and treated as if a zero was entered. Only valid options should be accepted and acted upon. The program should reject all erroneous responses.

The flexibility to either obtain a hard copy or view any report produced by the system would be desirable. At present, it is impossible to view some reports (such as the Daily and Monthly Work Summaries) on the screen.

In order to speed up access to patient records, searching should be flexible enough to permit keying either on the patient's name or account number. Access currently is by name only, with keying based on a combination of the first four letters of the last name, the first three letters of the middle name and a one letter initial.

A minor aggravation is the bell which sounds repeatedly whenever the program requests data input. It would be thoughtful if the user had the option to turn it off.

Special Features

With respect to special features, this is a "no frills" package. The program allows the possibility to view brief notes on each of the recall, billing, and scheduling screens. This provides a handy way to remember important information when required. A patient scheduler is included in the system; this is easy to use and permits double booking. The time unit utilized can be either 10 or 15 minutes, but once chosen, cannot be modified by the user. This is probably adequate for most practitioners. An inconvenience is that certain hours or days known in advance when a provider will not be in the office cannot be blocked out. Also, certain practitioners who prefer to carry out specific procedures at specific times of the day or on specific days of the week, do not have the facility for entering and utilizing this information.

The practice analysis report produced gives a breakdown of the total practice by procedure groupings (not by individual procedure codes) and shows percentage of work by procedure with percentage of practice income. Percentages of practice load and income are also produced for each dentist in relation to the total practice. This report is not, but should be, provided for hygienists as well.

The mailing labels module included in the program allows the printing of labels for all heads of families and dependents whose name begins with a specified letter of the alphabet. For a complete set of labels one must specify letter after letter, an inconvenience. As well, there is no provision to specify the printing of labels based on appointment or recall date range. This would be useful for sending out a batch mailing of notices for recall patients or patients with impending appointments.

Though not as versatile as some systems, the "X" system provides the capabilities of handling basic dental management needs and carries out these tasks adequately. It runs on IBM or compatible microcomputers so that most proprietary

business software can also be utilized on the system. However, when considering this software for your office, make sure that it is able to handle all of the special features that you require.

System "Y" Basic Functions

The "Y" system was first marketed to dentists in 1981. In the computer software field this represents a very long history and is well worth mentioning. It is available in both single user and multi-user configurations. The Canadian version 3.0 has been tested for this review. The system supports up to 100 providers so that it could be of value in both large and small offices. The basic package comes with a thorough and well written manual and many useful features. Two features, the installment contract plan and wordprocessor merge function, are available as optional extras at additional cost.

Statements are printed on New England Business Service (NEBS) forms, insurance billing on preprinted standard forms and all other reports on plain 8 1/2 x 11" blank paper. The user is given the option of either viewing on the screen or printing almost every report. A good feature is that the system will not crash if a report is queued to be printed when the printer is switched off, switched off-line, or if it fails due to a paper jam, etc. The user is given the option of fixing the problem and trying once again to print or terminating the current print job.

Error trapping is generally well done. The most blatant problem in this respect is that tooth numbers and tooth surfaces are not checked for validity. Other less important areas include date fields that accept dates after the current date and memo, social insurance number and referrer fields that accept alphanumeric characters where only numbers should be valid.

In general, most of the functions in the system use similar prompts, screens, option lists, etc. This makes learning and using the system a much more pleasant task. The screens displayed are logical and well presented. Only the patient information screen seemed cluttered and somewhat difficult to follow.

Default parameters are set in one section of the program. Using this program design makes it easy to locate and change defaults as required. These system defaults are used in the insurance form, account statement, mailing labels, billing method ("assignment billing mode" versus "non-assignment mode") and other functions. One area where the fur-

ther use of default values should be (but currently is not) considered is the day sheet function. Presently, the normal office hours, break times and time unit interval must be entered each day prior to producing the day sheet. An allowance for entering default acceptable tooth surfaces and tooth numbers would aid in error checking in this important area. Furthermore, a default province would be useful in the patient data entry function. Another point to mention about the patient data entry function is that the program insists that a postal code be entered; no further data can be input until this field has something in it. But what if the correct postal code is not known? The postal code when entered is not checked for the correct six character alternating letter-number sequence.

Special Features

Many special features are included in this program. These include user-definable practice analysis reports, multiple-fee schedules and an excellent integrated database. An installment contract plan is available at extra cost. The merging of patient information with standard letters can be done through the use of an external proprietary wordprocessing package. The most important missing feature is a patient scheduler.

The merging of patient information with standard letters can be done through the use of an external proprietary wordprocessing package (the vendor supports Wordstar). The system creates an (ASCII) data file containing information from user-selected patient records (for example, information from the records of all patients who have an overdue balance of more than 60 days and have a recall date in March). Then, within the Wordstar program the user creates a letter (or other document) and uses the Wordstar Mail-Merge function to merge the two files, the letter and data files.

The idea of using the dental management program to create a data file for use by an external wordprocessor is good. Why? Wordprocessing packages on the market today are very powerful and relatively cheap, while wordprocessors contained in most dental management programs are not nearly as sophisticated or powerful. Therefore, by having the dental software create a data file for use in an external word processor, the full power and features of an external wordprocessing package can be employed.

However, having support by the vendor limited to one wordprocessing package, namely Wordstar in this instance, is a limitation. A valuable improvement in

the wordprocessing interface would be an option to create data files in formats acceptable to other popular wordprocessing packages (such as WordPerfect). (Notwithstanding the above, those who are familiar with WordPerfect's merge function and macros could create a macro which would transform the data file now produced by the program to a secondary merge file which could be used in WordPerfect.)

The "Y" program is well designed and has stood up to the test of time. Provided that a patient scheduler is not required, it would be well worth considering for your office. △

The author wishes to thank two major software system suppliers DOMTRAK Systems Ltd., 456 Dundas St., Cambridge, Ontario, N1R 5R4, and MICRO/SYS80 Inc., 236 Waverly Rd., Southampton, Pennsylvania, 18966, for their cooperation in providing demonstration diskettes and information about their dental management systems.

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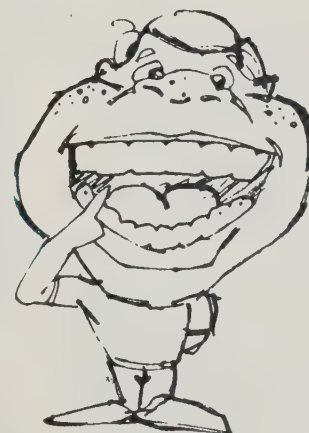
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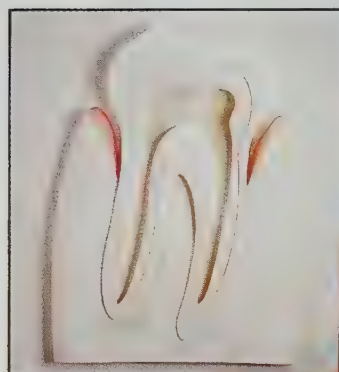
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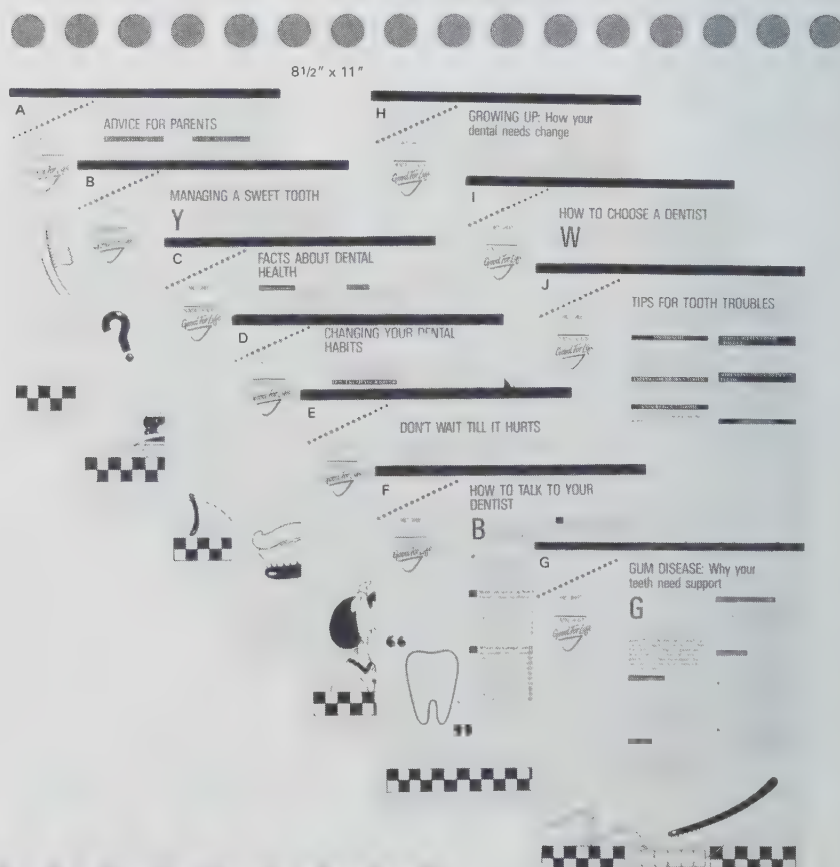
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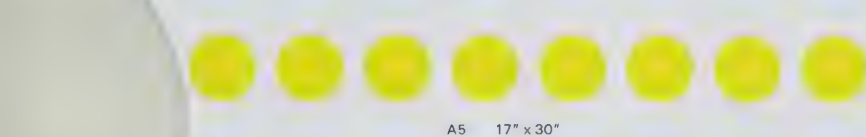
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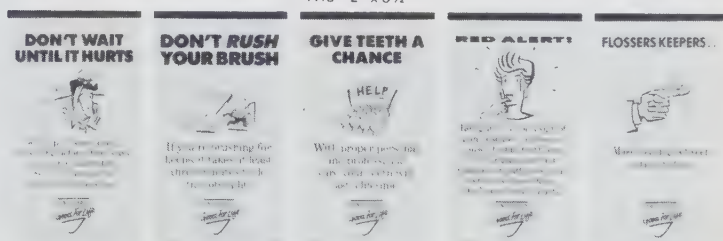
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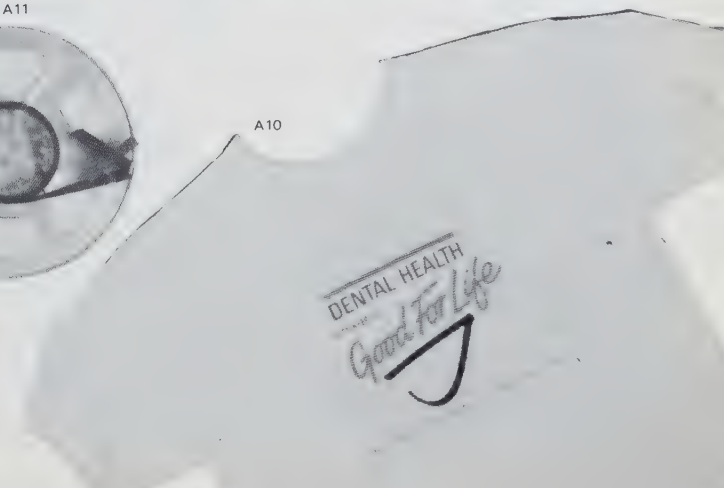
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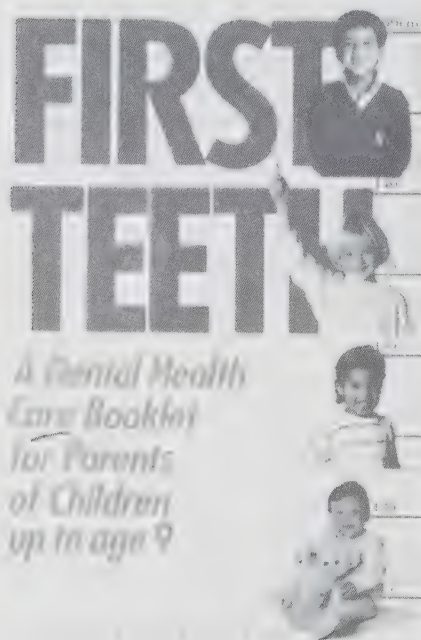
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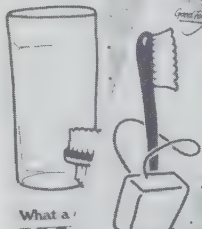
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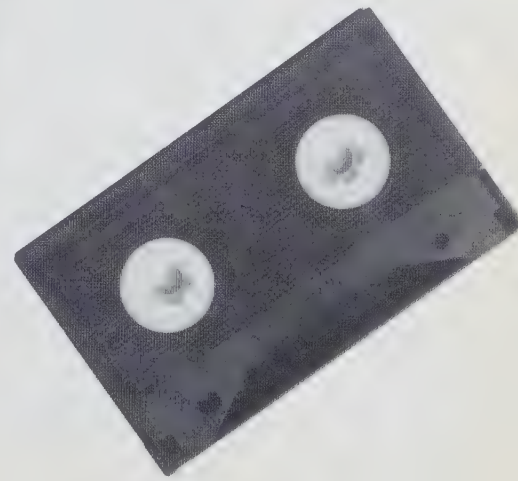
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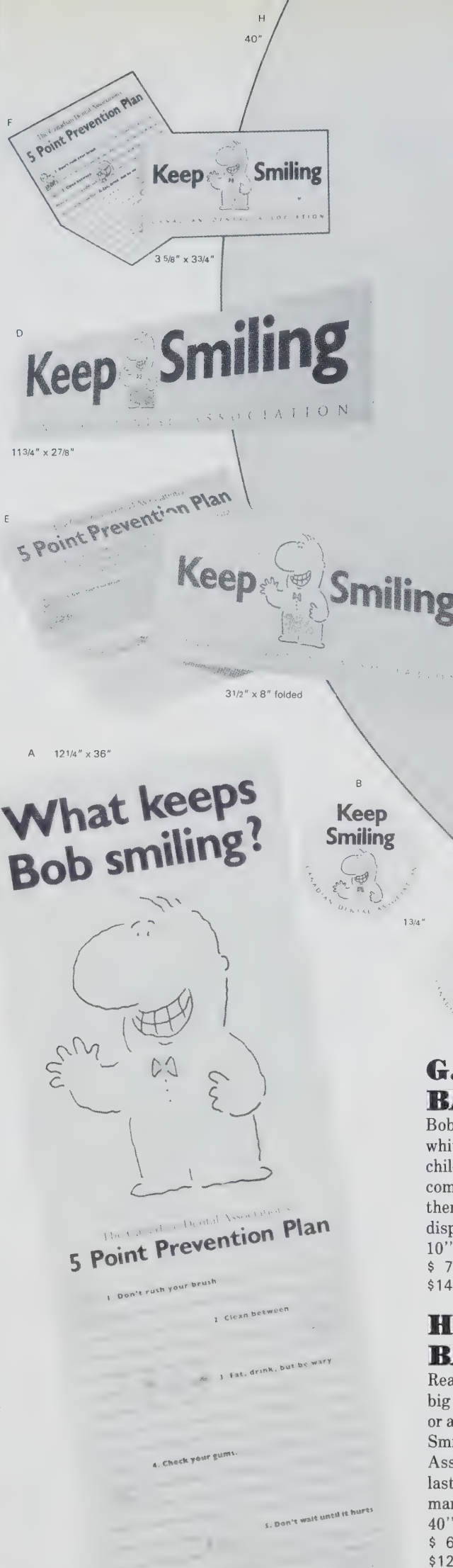
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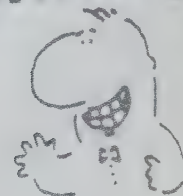
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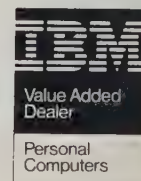
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A survey of a program for the dental care of **DISABLED ADULTS**

Michael J. Sigal, DDS, Dip Ped, MSc
Norman Levine, BA, DDS, Dip Ped, MScD, FRCD(C)
Robert L. Barsky, DMD, Dip Ped
Toronto

ABSTRACT

Two hundred and twenty-three charts of disabled adults who attended the MSH undergraduate clinic for the disabled were reviewed to determine the types of handicapping conditions present, and the dental services provided. This review indicated that the disabled adults have many dental needs, most of which can be managed by dental students within a supervised ambulatory dental clinic.

SOMMAIRE

On a passé en revue les fiches d'examen de 223 adultes handicapés traités dans une clinique d'étudiants en médecine dentaire pour connaître les différents handicaps de ces personnes et les services dentaires qu'on leur a donnés. On a découvert que les adultes handicapés ont de nombreux besoins dentaires et que, dans la plupart des cas, des étudiants en médecine dentaire travaillant dans une clinique supervisée pour patients externes peuvent très bien répondre à ces besoins.

Many reports have been published concerning the prevalence and management of dental disease in handicapped children.¹⁻⁵ However, there is a paucity of data pertaining to dental conditions in handicapped adults. In view of the fact that the disabled population is

aging in a similar pattern to the general population, their future dental management will depend upon producing and reviewing additional data on disabled adults with the concomitant establishment of dental clinics designed to meet their special needs.^{6,7} It is evident that present dental delivery systems are unable to meet the needs of the geriatric population, most of whom are essentially normal.^{6,8} How then can we expect these existing systems to accommodate the increased and more complex burden of the disabled adult or geriatric patient? With regards to dental management, the adult who is mentally retarded, severely physically handicapped or the geriatric patient suffering from Alzheimer's, are treated essentially in a similar manner, and all would benefit from clinics designated for disabled adults.⁹ Therefore, what is presently required are treatment centres for the provision of comprehensive dental care to these persons, similar to the clinics that are currently providing care to handicapped children. In addition, an integration of some of these clinics with the dental faculties is necessary in order that the new graduates will be trained and familiar with the delivery of dental care to the disabled adult, thereby enabling them to provide primary care within their future practices.^{10,11}

For the establishment of such a program, the term 'disabled' must be considered in its broadest form to include any chronic or acute, mental, physical, emotional or medical condition that imposes a limit upon the individual's ability to per-

form daily activities which are considered normal for their age group.¹² Under the terms of this definition, the mentally retarded adult, post cerebrovascular disease/stroke patient, and Alzheimer's patient would all qualify for treatment at such a clinic.

Within the last decade, there has been an increase in the number of programs established to provide dental care to the disabled. However, the majority were designed to provide care to handicapped children. This was primarily due to the fact that care of these patients was most easily directed to the specialty of pediatric dentistry.¹³ It is only recently that the adult special patient has universally begun to receive attention. In this regard, the Mount Sinai Hospital (MSH) Dental Department in conjunction with the Department of Pediatric Dentistry, Faculty of Dentistry, University of Toronto, has established a designated clinic for the treatment of handicapped adults. Within this clinic the disabled adults would receive dental care from undergraduate dental students under the supervision of a faculty member from the Department of Pediatric Dentistry. In this way, the students would receive hands-on training in the care of the mentally retarded, physically disabled or medically compromised adult patient.

Objectives

The purpose of the present study was to survey the dental services provided to the currently registered disabled adult patients who attend the undergraduate

clinic at the Mt. Sinai Hospital Dental Department, in order to determine the types of disabilities treated and to evaluate the effectiveness of this dental delivery system.

Materials and Methods

A retrospective chart review of the patients currently assigned to the undergraduate clinic for the handicapped was undertaken using a standardized dental and health summary form.¹⁴ Data on age, sex, residence, handicapping condition(s), medication(s), dental services provided, and methods of providing the dental care were collected.

A qualitative summary of the charts was considered adequate to reflect the general trends concerning the profile of the handicapped patients, their dental needs and the types of treatment received. The patients were classified according to their major medical conditions as reported in their chart. Their chief complaint for presenting to the clinic was noted. The dental services which were provided when indicated included: preventive care in the form of prophylaxis, fluoride application and oral hygiene instruction, periodontal treatment, restorative, endodontic, orthodontic, oral surgical, and prosthodontic care. In addition, the survey determined the frequency of general anesthetic utilization required in order to provide the necessary dental care. Finally, two matched subgroups of patients, those who required a general anesthetic and those who received all their dental treatment within the ambulatory clinic, were compared to determine if any differences existed between the quantity and types of service provided.

Results

Of the 223 handicapped patients reviewed, 104 (46.6 per cent) were female and 119 (53.4 per cent) were male, with an age range of 18-69 years. The majority of patients resided in their family home — 143 (64 per cent), while 27 (12 per cent) lived in a sheltered group home environment; 16 (7 per cent) were institutionalized within a chronic care facility and 11 (5 per cent) were living independently. No data were available for the remaining 12 per cent of patients.

The most prevalent handicapping condition was mental retardation, in 80 (36 per cent), of whom 39 were female and 41 male with an average age of 25 years. The second most common condition was a seizure disorder, which was present in 56 (25 per cent), 24 female and 32 male,

TABLE I

**Profile of Patients Attending the Dental Clinic for the Disabled —
n = 223**

Handicapping Condition	Total Number	Male	Female	Average Age (yrs.)
Mental retardation	80 (36%)	41	39	25
Seizure disorder	56 (25%)	32	24	25
Down's syndrome	36 (16%)	17	19	24
Cerebral palsy	24 (11%)	12	12	30
Wheelchair (para/quadruplegia)	20 (9%)	14	6	34
Others (Alzheimer's, autism, blind, CF, MS)	7 (3%)			18-69

with an average age of 25 years. Many of these individuals had additional disabling conditions associated with their seizure disorder such as mental retardation²³ and cerebral palsy.⁸

The third most frequent group were adults with Down's syndrome — 36 (16 per cent) of the individuals (19 female, 17 male), with an average age of 24 years. Cerebral palsy was the fourth most prevalent disabling condition, evident in 24 (11 per cent) persons (12 female, 12 male), with an average age of 30 years. Finally, being confined to a wheelchair due to para- or quadruplegia was the fifth most common occurrence, present in 20 (9 per cent) of the patients (6 female, 14 male, average age 34 years). The remaining 7 (3 per cent) individuals had a variety of problems such as Alzheimer's, autism, blindness, cystic fibrosis, and multiple sclerosis. (For summary, see **Table I**).

Of the total sample, 59 (26 per cent) individuals had another medical problem associated with their primary handicapping condition such as: congenital heart disease in 11 (19 per cent), drug allergy in 15 (25 per cent), hypertension in eight (14 per cent), and recurrent respiratory infections or pneumonia in 10 (17 per cent) persons (percentage of the sub-group).

The most frequently taken medications were: the anti-seizure related drugs such as phenytoin (dilatrin) by 36 (16 per cent), carbamazepine (tegretol) by 14 (6 per cent), valproate (depakene) by 7 (3 per cent), primidone (mysoline) by 14 (6 per cent), and phenobarbital (luminal) by 17 (8 per cent) of the individuals suffering from a seizure disorder. The second most common medications were the minor tranquilizers such as diazepam, taken by 18 (8 per cent) of the patients.

The majority of the individuals (202) (90.6 per cent) presented to the clinic with a chief complaint of requesting routine dental care because they (family or

case worker) perceived a need or because a significant period of time had elapsed since their last dental visit. Only 21 (9.4 per cent) persons presented with a chief complaint of oral-facial pain, or swelling.

The patients have been attending the clinic for an average period of four years, and during this time a considerable quantity of dental treatment has been provided by the undergraduate dental students from the pediatric dental department. Every patient received preventive care in the form of a prophylaxis/light scaling and oral hygiene instruction at least once a year. A total of 267 restorations were placed, 98 teeth were extracted, 19 root canal therapies were performed, and 10 partial dentures were inserted. Services were evenly distributed among the differing groups of the disabled, with no predilection for a specific type of disability. Dental treatment plans were completed by the undergraduate students in 152 (69.2 per cent) patients. The remainder were not completed at the time of the survey, and were continuing with their treatment at the MSH clinic.

Only six patients required a gingivectomy for the removal of phenytoin-induced gingival hyperplasia. Each of these patients suffered from multiple disorders such as mental retardation or cerebral palsy in association with a seizure disorder. None of the 25 patients whose only disability was a seizure disorder required a gingivectomy.

Dental treatment was provided successfully to 143 (64 per cent) of the patients within the ambulatory dental clinic by employing the SHOW TELL DO method of behaviour modification. General anesthesia was required in order to provide dental treatment to the remaining 80 (36 per cent) patients. Conscious sedation was attempted but found to be very unpredictable and hence unsuccessful for the management of these patients. All of the patients who received a general

anesthetic were then recalled to the ambulatory clinic for routine follow-up visits. Of the patients who received a general anesthetic, three (3.8 per cent) had a severe life-threatening reaction which required the dental procedure to be terminated, and in one instance the patient died due to postoperative respiratory obstruction.

The comparison of the two matched groups of disabled adults — one group requiring a general anesthetic to one receiving all treatment within the ambulatory clinic — revealed that the general anesthetic group ($n = 15$) received a total of 13 preventive procedures, 24 restorations and nine extractions, while the ambulatory group ($n = 15$) received a total of 12 preventive procedures, 26 restorations and 6 extractions. In order to provide this equivalent amount of treatment for the 15 clinic patients, 44 one-and-one-half hour appointments were required — an average of three clinic visits per patient.

Discussion

The Mount Sinai Clinic for The Disabled has demonstrated that supervised undergraduate dental students are capable of providing dental care to disabled adults. Of the 223 charts reviewed, treatment was completed for 152 patients, whose major handicap varied from mental retardation to Alzheimer's disease, and the remaining patients are presently receiving the necessary care.

Due to the present practice of normalization of the disabled, an increasing number of disabled adults will be integrated into society.¹⁵ As a result, they will seek treatment from dental practitioners in their community. In order for this to occur, it will be necessary for the new dental graduates to have some first-hand clinical experience in treating the disabled in order to provide the primary dental care required. Undergraduate students have an average exposure of six three-hour clinical sessions during their final two years. It appears from the treatment provided that such an educational/training clinic is a success.

In addition, the continued success and growth of the MSH clinic for the disabled reflects a need for the creation of more such hospital-based clinics. As this population ages, their associated medical problems will become increasingly complex, making the delivery of dental care more difficult unless a hospital-based clinic is available. Although the average age of the MSH patients was only 25 years, a significant number of patients

(59 or 26 per cent) had an associated medical problem in addition to their major handicapping condition, such as congenital heart disease, hypertension or severe recurrent respiratory tract infections (pneumonia). Already there is evidence that the patient profile is changing from young healthy adults to the middle aged, with one or more associated medical problems. As they continue to age, their medical problems will become worse, making the delivery of dental care even more difficult. If dental clinics and educational programs are established for disabled young adults, rendering treatment is usually less complicated and has a greater chance of long-term success. In addition, such a program should then have the inherent flexibility to adapt to the changing dental health needs of the aging disabled patient.

The survey of the charts revealed that a total of 384 services were provided (restorations, extractions and root canal) to treat the effects of dental caries — an average of two services per patient. Given that most of the active patients have been attending the clinic for an average of four years, this then equates to one service every two years, reflecting a relatively low incidence of active caries development. This finding is in agreement with many previous studies that have all determined caries incidence to be equal to or slightly less prevalent, but never greater than that observed in the general population.^{1,5,16-21}

Of greater concern is the poor level of oral hygiene that is evident in most of the disabled and the resultant periodontal disease that usually develops.^{1,3,4,22,23} Therefore, more emphasis must be placed on preventive treatment in the disabled adult in order to prevent loss of teeth due to periodontal disease.

An interesting finding was that none of the patients who suffered only from a seizure disorder ($n = 25$) required a gingivectomy, while six who had a seizure disorder associated with another disability, such as mental retardation, blindness or cerebral palsy, did require a gingivectomy. All patients were receiving dilantin at a similar dosage and duration for the control of their seizures. A possible explanation for this finding may be that in the latter group, oral hygiene was less effective, allowing for a greater accumulation of plaque/calculus which can then stimulate a more rapid overgrowth of the gingival tissues. It is generally accepted that localized gingival inflammation due to plaque can stimulate an increased rate of growth of phenytoin-induced gingival hyperplasia.^{24,25} Therefore, it can be

hypothesized that the seizure-only group were able to perform superior homecare oral hygiene and thus experienced less gingival hyperplasia.

Several authors have stated that the majority of handicapped individuals can be treated in an ambulatory dental clinic setting.²⁶⁻²⁸ It has been estimated that only 4-5 per cent of all the disabled would require the administration of a general anesthetic in order to receive dental care.^{28,29} In contrast to these findings, 35 per cent of the handicapped patients at MSH received a general anesthetic, and 65 per cent were treated in the ambulatory dental clinic. There are several possible explanations for such a finding. The adult disabled due to their increased size, and strength, may be more difficult to manage in a clinic than a pediatric patient, and as such may require a general anesthetic. As noted previously, sedation was attempted but found to be ineffective on a routine basis. Also, many of the disabled suffered from secondary medical problems; in which case it was decided that it would be more expedient for the patient to have treatment performed under general anesthesia, in an operating room with a trained anesthetist present. In addition, with greater emphasis being placed on patients' rights and consent, it is a much more humane approach to provide total dental care under general anesthesia than to use physical restraints/sedation for multiple appointments in order to complete the equivalent amount of treatment. Finally, it is the philosophy of the MSH program to use general anesthetic for any new patient who is a management problem, in order to obtain all of the necessary dental records and to treat all dental pathology definitively. This will establish the baseline for the patient, after which they are re-introduced into the ambulatory clinic for follow-up maintenance and behaviour modification training. In this regard, if poor oral hygiene is evident at the initial consultation, this is not a contraindication for restorative treatment under general anesthesia, in contrast to what has been previously stated.²⁶ With a single general anesthetic, all dental pathology can be treated and then the majority of the clinic time can be devoted to developing a preventive program without worrying about acute problems arising which would require definitive treatment. In this way, the primary goal of maintaining as many teeth for as long as possible, in order to preserve a functional masticatory system, can best be achieved. The primary goal of preservation of the natural dentition for the dis-

abled is very important since most of the patients cannot tolerate or maintain prosthetic appliances.³⁰

General anesthesia as a behaviour management modality for the delivery of dental care is relatively safe, with a mortality rate of 1:29,000 anesthetics administered in the hospital environment.³¹ In addition, it has been determined that the handicapped who had dental treatment while under general anesthesia suffered very few anesthetic-related complications, and those that did develop were minor.³² In comparison, the risk of general anesthetic administration at MSH (3:80, 3.8 per cent) appears to be greater than that reported in the literature.³¹⁻³³ This is most likely due to the fact that many of the MSH patients have multiple handicapping conditions, and are in an older age group, which in turn places them at a greater risk for developing complications. However, we feel that in the majority of cases the benefit achieved in terms of providing excellent dental care under general anesthesia outweighs the risk associated with a general anesthetic. With a comprehensive pre-operative medical assessment and management in conjunction with hospital anesthetic administration, most of the cases can be managed without any untoward consequences. This approach is superior to having the patient present with a true dental emergency and then because of management considerations, one must provide for a general anesthetic in a hurried fashion. Therefore, with a comprehensive pre-operative management, the risks of general anesthesia should be minimized.

A comparison of the quantity of treatment completed while under general anesthesia versus treatment within the clinic revealed that an equivalent amount of care was provided. However, the clinic group required an average of three visits per patient to complete the same amount of treatment. One would have expected that a greater quantity of treatment should have been completed in the general anesthesia group. But, as mentioned earlier, for many adult disabled patients it is impossible to provide an adequate examination unless the patient is anesthetized. In which case, it is not until the patient is unconscious that the clinician can determine what treatment is required. In many cases, a low caries rate is evident, and a minimal amount of treatment will be required. However, we still feel that the initial general anesthetic was warranted in order to obtain a complete set of baseline records, which can then be utilized to plan continued care.

The findings of this review have demonstrated that the disabled adult can receive the required dental care within an ambulatory clinic associated with a general anesthetic service, and that this service can be adequately provided by supervised undergraduate dental students. It is our hope that the students who have had this clinical exposure and experience will provide treatment to special patients as a part of their future practices. Δ

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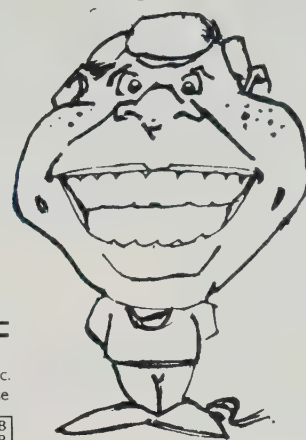
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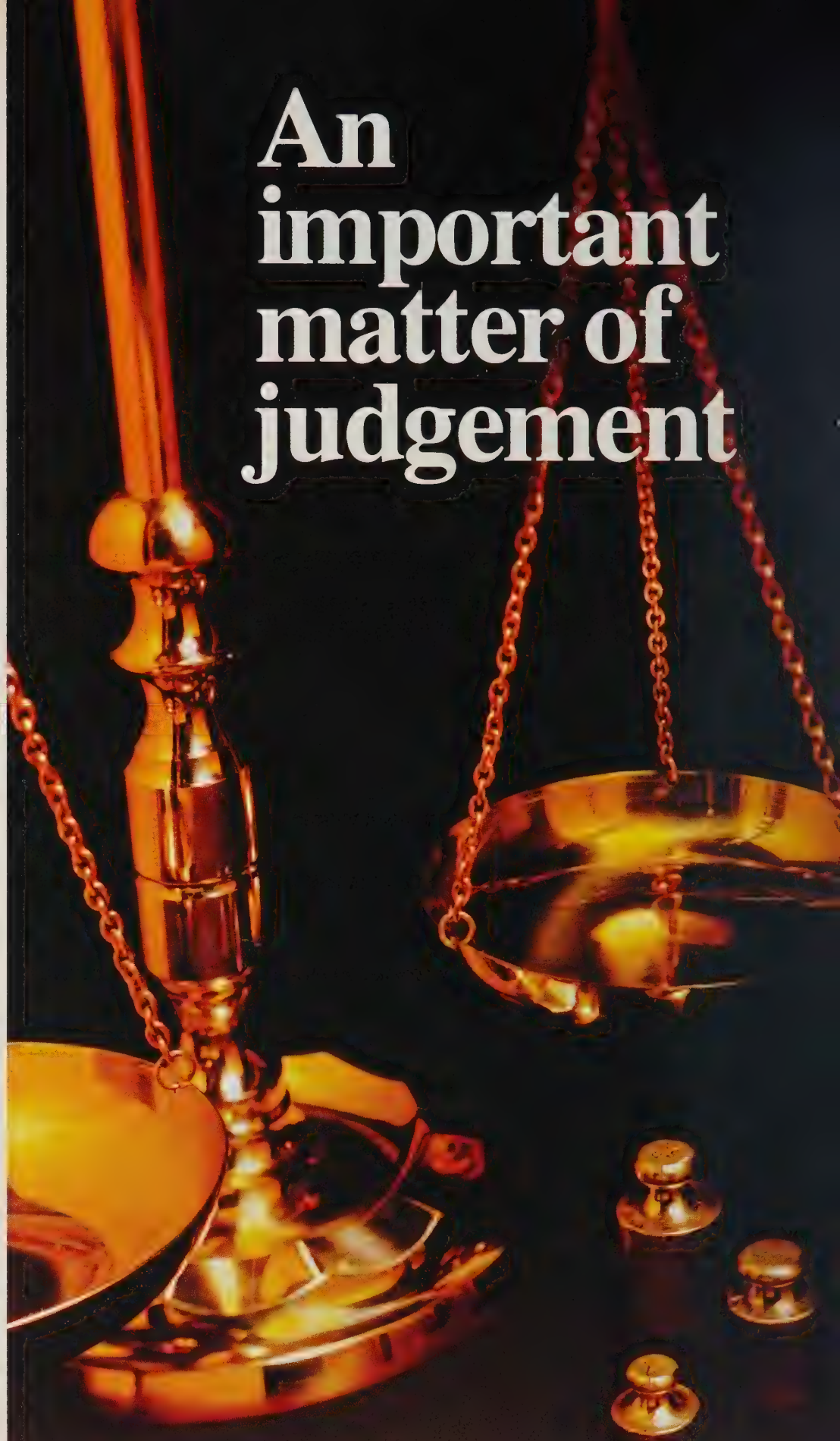
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SAFETY		
hypersensitivity in rare instances	ADVERSE EFFECTS	GI bleeding, ulceration, nausea, vomiting, diarrhea, vertigo, tinnitus, hearing loss, pruritus, urticaria, angio-edema, anaphylaxis
slight increase in prothrombin time for patients on oral anti-coagulants but generally clinically insignificant	PRECAUTIONS	history of GI ulcerations, bleeding tendencies, anemia or hypoprothrombinemia; patients with asthma or other allergic conditions; concomitant use with anticoagulants, uricosurics, other non-narcotic analgesics, hypoglycemics, alcohol, methotrexate.
none, except rare hypersensitivity	CONTRAINDICATIONS	salicylate sensitivity, active peptic ulcer
no known risk	IN PREGNANCY	risk of anemia, hemorrhage, delayed or prolonged labour, increased risk of intracranial hemorrhage in premature infants, premature closure of the ductus arteriosus
no specific risk	IN CHILDREN	specific risk of intoxication using therapeutic dosage in febrile and dehydrated children
rare equivocal reports of reversible liver function abnormality at high dosage	HEPATIC TOXICITY	reversible hepatitis in apparent risk groups at high dosage
equivocal	ANALGESIC NEPHROPATHY	equivocal
oral anticoagulants (as above) chloramphenicol (increased half life)	DRUG-DRUG INTERACTIONS	oral anticoagulants, uricosurics, non-steroidal anti-inflammatory agents, oral hypoglycemics, corticosteroids, ethyl alcohol, methotrexate
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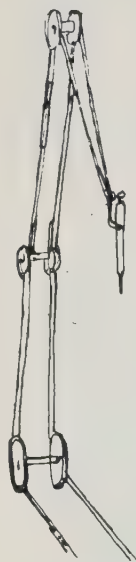
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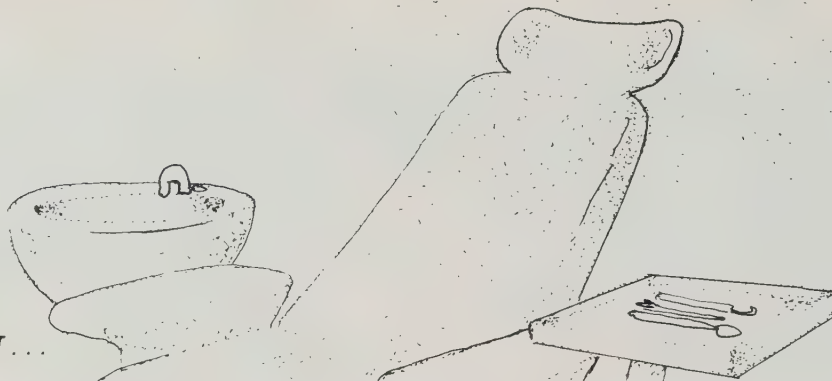
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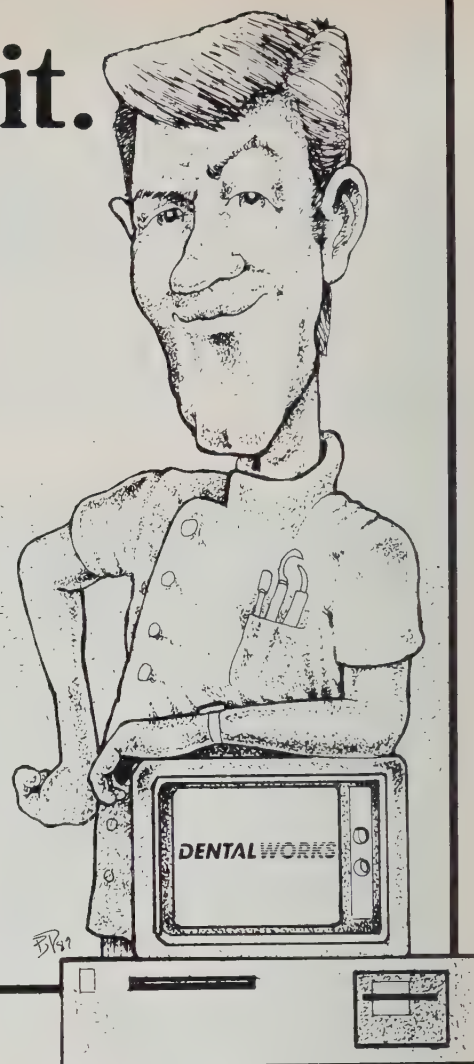
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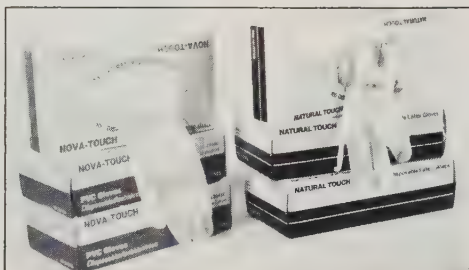
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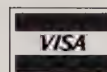


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IMPACTION OF THE FIRST PERMANENT MOLAR

Two case reports

G.L. Lapeer, DDS
Kingston, Ont.

ABSTRACT

This article presents two cases of impaction; the first involving first and second permanent molars and the second involving the first permanent molar. These case presentations vary from other reports of this type, due to the unusual radiographic presentation of the impactions.

SOMMAIRE

Voici un article qui présente deux cas de dents enclavées. Dans le premier, il s'agit des première et deuxième molaires permanentes et, dans le second, de la première molaire seulement. Ces cas se distinguent de l'ordinaire à cause des radiographies exceptionnelles qui en ont été prises.

Case 1

A 21-year-old Caucasian male was referred to the dental clinic at St. Mary's of the Lake Hospital, Kingston, with pain and swelling involving the body of the left mandible. Clinical examination revealed a partially edentulous mouth with a severe pericoronitis and buccal swelling involving the lower left first and third molars. The first molar had rotated from a normal mesial-distal orientation to a buccal-lingual orientation and the third

molar was positioned horizontally with its coronal portion lying adjacent to the lingual surface of the first molar. Further clinical examination revealed the absence of: the upper right first, second and third molars and lateral incisor; the upper left third molar; the lower left second molar; and the lower right first, second and third molars. Large carious lesions were present in the existing molars and lower left second bicuspid and there was a generalized marginal gingivitis. The patient's medical and dental history were non-contributory except that he could only recollect the extraction of the lateral incisor, one upper molar and one lower molar.

A panoramic radiograph (Fig. 1) confirmed the clinical examination and revealed the vertical impaction of the upper right and left third molars; the non-eruption of the upper right second molar; the distal horizontal impaction of the lower right first molar; the mesial horizontal impaction of the lower right third molar; the vertical impaction of the lower right second molar; and an apical radiolucency on the lower left second bicuspid. The patient was informed of the radiographic results and questioned about previous dental care and family history of unusual dental findings. He stated that in the past he had received only sporadic dental care for emergencies and had not been informed of any existing

non-eruption problems. The patient was unaware of any unusual dental problems in his immediate family.

The patient requested the removal of the lower left second bicuspid, first molar and third molar and the lower right first, second and third molars. Under local anesthesia, the lower left teeth were surgically removed and a large mass of soft tissue comprising follicular tissue, chronic granulation tissue and acute inflammatory infiltrate was curetted. The surgical site was closed with 000 silk and the patient was placed postoperatively on a 7-day course of penicillin-V, 300 mg and acetaminophen compound with 30 mg codeine to control pain. He was seen one week later for suture removal and reported an uneventful postoperative period. He returned to our dental clinic 10 weeks later and under local anesthesia and nitrous oxide analgesia had the lower right first, second and third molars surgically removed. Follicular tissue with chronic inflammatory infiltrate was curetted from the surgical site and the area was closed with 000 silk. Again the patient was placed on a 7-day postoperative course of penicillin-V, 300 mg and acetaminophen compound with 30 mg codeine. One week later, he returned for suture removal and again reported an uneventful postoperative period. He is currently undergoing dental care from his new family dentist to re-establish a

healthy, functioning mouth. The surgical sites are still being monitored to detect the recurrence of any pathology.

Case 2

A 24-year-old Caucasian female was referred to the dental clinic at St. Mary's of the Lake Hospital with pericoronitis of the lower left third molar. Clinical examination revealed a very healthy mouth with an inflamed operculum of the lower left third molar. Only one restoration was present, a lingual resin in the lower left first incisor, and the lower left first molar was missing. The patient reported that the only dental treatment she had received was root canal therapy on the lower left incisor and that she had never had an extraction. Her medical history was non-contributory. A panoramic radiograph revealed the presence of a total bony disto-angular impaction of the lower left first molar (Fig. 2). Since the tooth was asymptomatic, the patient requested that the area be left alone and stated she would have something done if it became symptomatic or if any pathological changes developed. She was advised to have the area of the lower left first molar examined routinely. The pericoronitis involving the lower left third molar was treated by operculectomy, under local anesthesia, and the patient had an uneventful postoperative period.

Discussion

This article has presented two cases involving impactions of permanent first molars. Case 1 also involves the impaction of permanent second molars. The impaction or non-eruption of these teeth is considered to be a rare clinical entity.¹ Several etiological factors have been reported to account for this phenomenon: dentigerous cysts;¹ inadequate arch length;¹ compound and complex odontomes;^{1,2} and idiopathic impaction,¹ which in some cases appears as submergence resulting from ankylosis.^{1,3,4} In Case 1, the upper right second molar and lower right first and second molars are all idiopathic impactions. There is no evidence to suggest any other cause for these teeth being impacted. An extremely rare clinical finding is the radiographic appearance of the impacted lower right first, second and third molars. The crowns of all three teeth approach each other coronally. Two cases involving two impacted permanent molars in this alignment have been reported earlier¹ and have been termed "kissing teeth."¹ This is the only case of a triplet of "kissing teeth" that the author is aware of. In Case 2 the lower left first molar is a disto-

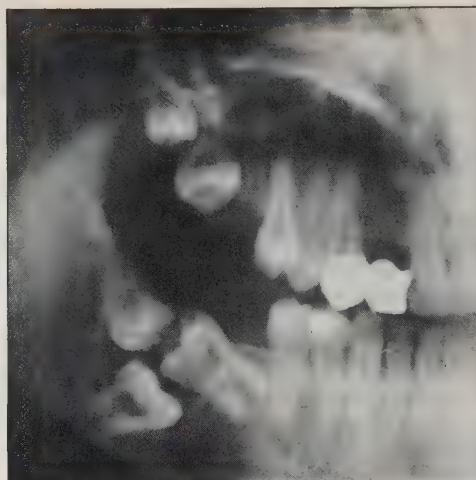


Fig. 1. Panoramic radiograph of Case 1 from right to left. Note the unusual impaction of the lower right, first, second and third molars.

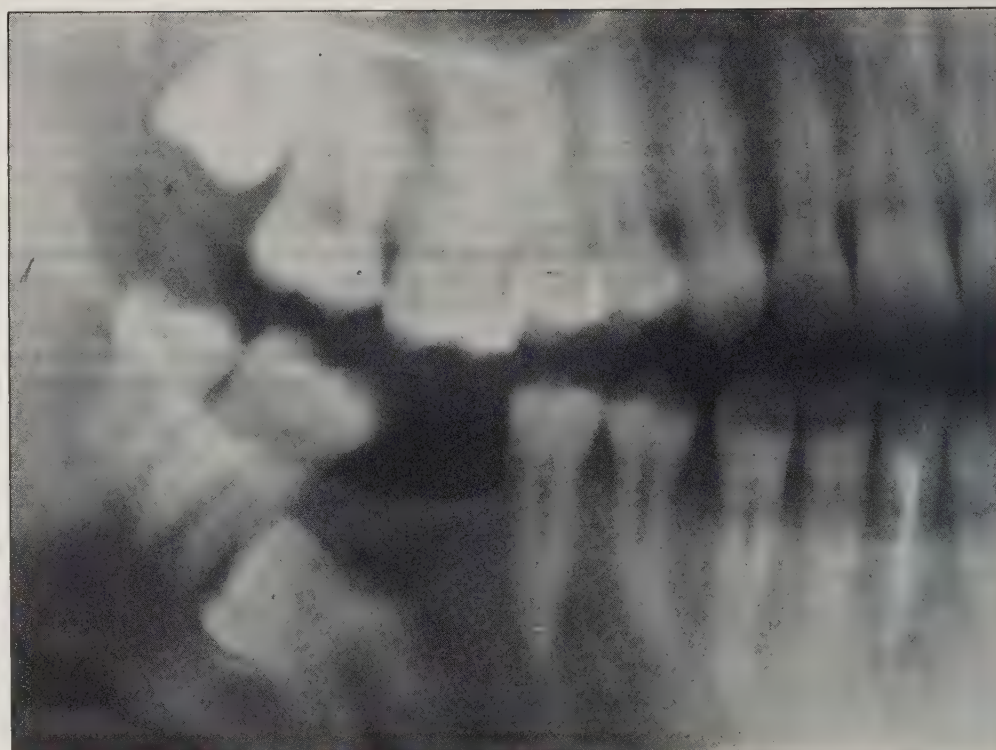
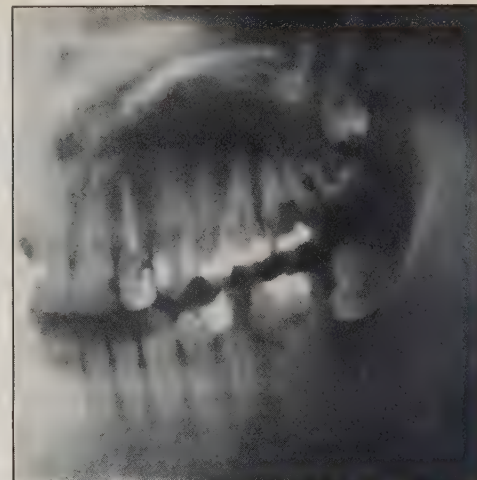


Fig. 2. Panoramic radiograph of Case 2 (patient's left side). The lower left first molar is a disto-angular total bony impaction.

angular impaction. There is radiographic evidence of sclerosis around the roots of this molar but no other evidence to suggest why the tooth is impacted. Again, this case is classified as idiopathic impaction, and its rarity involves the impacted position of the molar. Other cases^{1,2} have reported impacted first molars at the lower border of the mandible, but with a vertical orientation, not a disto-angular.

Conclusion

This article has presented two rare cases of impactions involving the first and second permanent molars. Apart from the interest of these cases as clinical oddities, this paper also reconfirms the importance of a proper radiographic survey on

patients with missing teeth, particularly those whose dental histories which do not coincide with clinical findings. Δ

Dr. Lapeer is on the staff of the Department of Dentistry, St. Mary's of the Lake Hospital, Box 3600, Kingston, Ont. K7L 5A2
Reprint requests to Dr. Lapeer.

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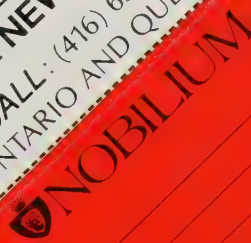
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Ultracaine® D-S D-S forte (articaine HCl)

Action

Ultracaine (articaine HCl) has been shown to block conduction by interfering with the process fundamental to the generation of the nerve action potential, namely the large transient increase in the permeability of the membrane to sodium ions that is produced by a slight depolarization of the membrane.

Indications

Ultracaine is indicated for infiltration anesthesia and nerve block anesthesia in clinical dentistry.

Contraindications

Ultracaine is contraindicated in patients with a known hypersensitivity to local anesthetics of the amide group; in the presence of sepsis near the proposed injection site; in patients with severe shock; in patients with any degree of heart block; in patients with existing neurologic disease and in patients with severe hypertension.

When **Ultracaine** with epinephrine is used, the caution required of any vasopressor drug is in order.

Warnings

Methemoglobinemia

As with other local anesthetics, **Ultracaine** is capable of producing methemoglobinemia: this has been observed when an intravenous regional anesthesia technique was used. **Ultracaine**, when used as directed in dental procedures, was not associated with methemoglobinemia.

Usage in Pregnancy

Animal studies have not demonstrated teratogenic or embryotoxic effects of **Ultracaine**. However, safe use in pregnant women has not been established. **Ultracaine** is unlikely to be transferred to the mother's milk since it is rapidly decomposed and eliminated.

Precautions

Resuscitative equipment and drugs should be readily available when any local anesthetic is used. The safety and effectiveness of local anesthetics depend upon proper dosage, correct technique, adequate precautions and readiness for emergencies. **Ultracaine** should be used cautiously in persons with known drug allergies or sensitivities, or suspected sensitivity to the amide-type local anesthetics.

Patients with Special Diseases and Conditions

The p-hydroxybenzoic acid methyl ester contained in **Ultracaine**, as a preservative, has a hydroxy group in the para-position. This fact should be borne in mind in the case of patients with para-group allergy.

Adverse Reactions

Reactions to **Ultracaine** are characteristic of those associated with amide-type local anesthetics.

A major cause of adverse reactions to this group of drugs is excessive plasma levels, which may be due to overdosage, inadvertent intravascular injection, or slow metabolic degradation. Other causes of reactions to these local anesthetics may be hypersensitivity, idiosyncrasy, or diminished tolerance.

Dosage and Administration

As with all local anesthetics, the dosage varies and depends upon the area to be anesthetized, the vascularity of the tissues, the number of neuronal segments to be blocked, individual tolerance and the technique of anesthesia. The lowest dosage, needed to provide effective anesthesia should be administered.

	Infil- tration	Nerve Block	Oral Surgery
Ultracaine DS forte	0.5-2.5 mL	0.5-3.4 mL	1.0-5.1 mL
Ultracaine DS	0.5-2.5 mL	0.5-3.4 mL	1.0-5.1 mL

It is recommended not to exceed 7 mg/kg body weight in adults.

To date, **Ultracaine** has not been administered to children under 4 years of age, nor in doses greater than 5 mg/kg in children between the ages of 4 and 12.

Supply

Ultracaine D-S: 4% with epinephrine (1/200,000) and **Ultracaine D-S forte:** 4% with epinephrine (1/100,000) are available in 1.7 mL cartridges, box of 50 cartridges.

Product Monograph available on request.

References:

1. Dudkiewicz A, Schwartz S, Laliberté R: Effectiveness of Mandibular Infiltration in Children Using the Local Anesthetic **Ultracaine**®. Canadian Dental Association Journal 1987; Vol 53 (No. 1): 29-31.
2. Lemay H et al: Ultracaine in conventional operative dentistry. Journal of the Canadian Dental Association 1984; 50 (No. 9): 703-708.

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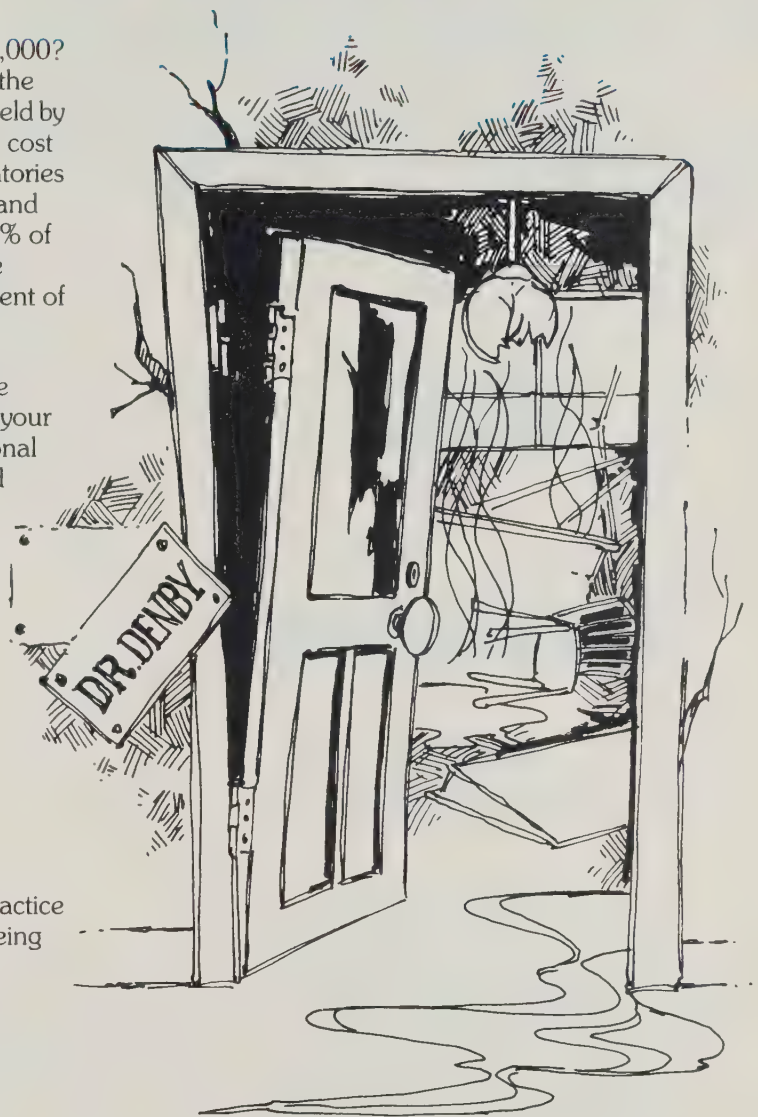
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Treatment of the edentulous maxillary arch using
osseointegrated implants supporting a
**FIXED-REMOVABLE
PROSTHESIS**

*P.A. Watson, DDS, MScD
R.D. Listrom, DMD, MSc
J.M. Symington, BDS, MSc, PhD, FDSRCS(Eng)
Toronto*

In 1969, Brånemark and his co-workers¹ presented a titanium fixture which appears to be biocompatible and able to support prosthetic teeth over a long period. This device and the supporting laboratory and clinical studies have been extensively reported.²⁻⁶ The primary use of this implant has been in the reconstruction of the fully edentulous mandibular arch, although other applications for both the partially edentulous and fully edentulous arch have been demonstrated.⁷⁻¹⁰

Lundqvist and Carlsson,¹¹ in a report of 21 patients, used a fixed prosthesis supported by implants in the maxillary arch. They reported satisfactory results for the majority of patients, but it was noted that new solutions are often required for individual patients. This is especially true in the maxilla where it is sometimes difficult

to place implants in favourable locations for a fixed prosthesis. In some cases, in order to obtain optimal bone support, the abutments are inclined labially in the maxillary anterior region and buccally in the premolar area. Consequently, with a fixed prosthesis, because of the inclination of abutments, some retaining screws may need to be placed through the labial or incisal surfaces of the prosthetic teeth and the access channel closed with resin, a disadvantage which compromises the esthetic result.

Furthermore, patients with a high smile line require an acrylic flange to obscure the implant abutments. Those with marked resorption of the alveolar ridge or defects from traumatic injury require the use of a flange to provide optimal lip support and a satisfactory facial

profile. During speech, a labial flange also impedes the escape of air between the implants, improving phonetics in certain cases.

This paper describes the design of a prosthesis that meets a number of these requirements. In this design, the segment containing the teeth and labial flange is removable by the patient, leaving a second segment fixed to the supporting implants.

Clinical and Laboratory Procedures

After the transmucosal abutments are placed and tissues have healed, an impression of the maxillary arch is secured according to established protocol and a master cast is produced containing

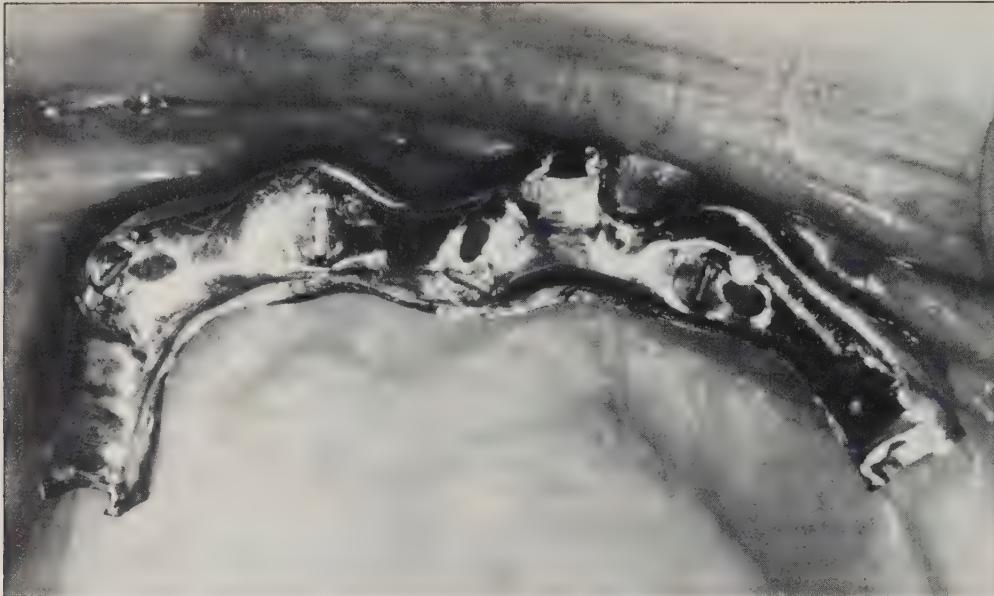


Fig. 1. Occlusal view of fixed component. Note lingual ledge to receive the lingual margin of the removable component. Gold screws are locked with acrylic retained in slots.

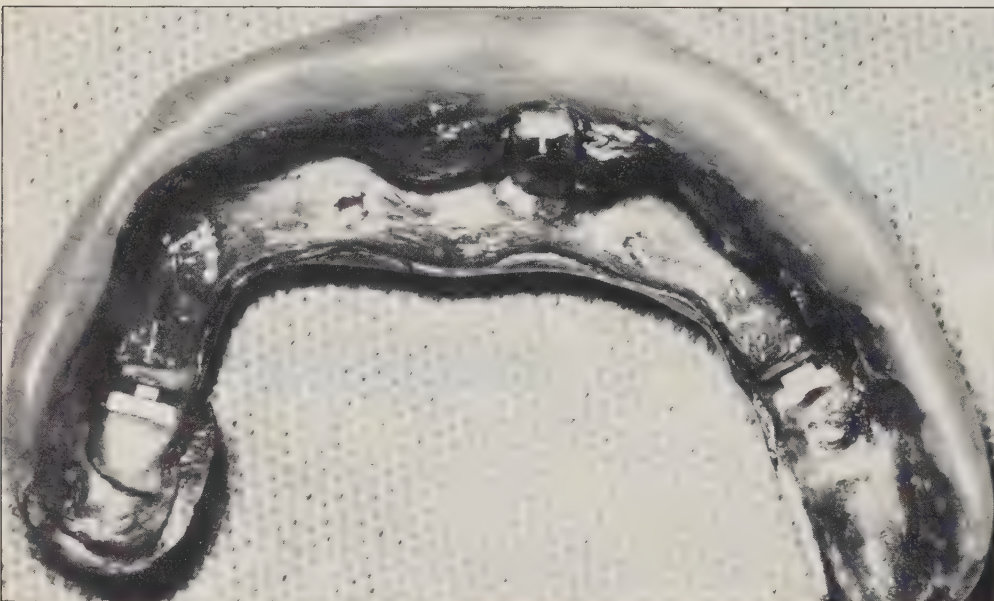


Fig. 2. Inner view of removable component showing slide attachments.

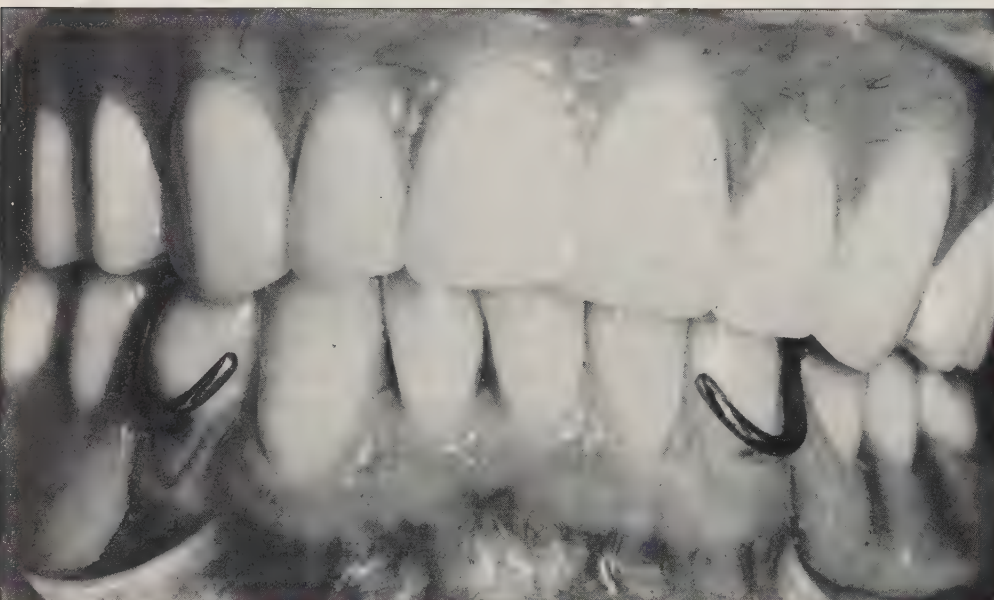


Fig. 3. Anterior view showing removable component in place with labial flange for lip support.

the abutment analogues. Conventional registration rims can be used for facebow and jaw relation registrations in order to mount the maxillary and mandibular casts on an articulator.

The segment attached to the implants by screws is a rigid bar that is approximately rectangular in cross section with three precision attachments, one at each of the extreme ends and one located anteriorly (**Fig. 1**). Those at the ends can be large attachments and should contain a horizontal plunger activated with an adjustable spring for control of retention⁺. The anterior attachment can be either a stud attachment that will couple with a receptacle placed within the fixed bar or a slide attachment with minimal labial-lingual thickness⁺⁺. The lingual surface of the fixed bar is milled to provide a lingual guiding plane parallel to the attachments and a lingual gingival shoulder to serve as a margin for the lingual apron of the removable segment.

When an accurate fit between the bar and implant abutments is verified, the matrix segments of the precision attachments are soldered to the implant bar and a refractory cast is prepared. The refractory cast is used for the wax construction of the removable segment. Wax retention webbing is incorporated in the wax pattern for the attachment of acrylic teeth and labial flange.

After the removable frame is cast, the matrix components of the precision attachments are soldered to the frame and acrylic teeth are attached with wax for clinical verification of centric occlusion and esthetic results. The teeth are processed to the removable framework using conventional procedures. To prevent "show through" from the metal supporting the teeth and labial flange, opaque pink acrylic should be applied to the underlying frame when the wax is eliminated from the processing flask. During insertion of the prosthesis, the implant bar is firmly attached to the implants by retaining screws. Since these screws may loosen with function, shallow slots are prepared in the bar to engage the sides of the screw heads. The slots are closed with autopolymerizing acrylic to prevent loosening of the fixation screws.

This prosthetic design permits the use of a removable component with an acrylic flange simulating natural alveolar contours, obscuring the implant abutments and providing lip support (**Figs. 2, 3, 4**). The flange limits the escape of air between the abutments during speech and reduces phonetic impairment. It also allows the surgeon to place the implants in areas of

optimal bone support, since moderate facial inclinations are acceptable. The use of a removable component aids in the maintenance of tissue health, as implants are accessible for cleansing (Fig. 5). This implant prosthesis, supported by four implants⁺⁺⁺ (Fig. 6), has functioned successfully for 52 months, with annual servicing of the Schatzman slide attachments. Δ

+Schatzman adjustable slide attachments: Cendres and Metaux, 2501 Biel-Bienne, Switzerland.

++Ney-lock attachment: The J.M. Ney Co., Hartford, Connecticut.

+++Nobelpharma Canada Ltd. 1235 Bay St. Toronto, Ont. Canada

Dr. Watson is professor, Department of Biomaterials, University of Toronto, and staff prosthodontist, Toronto General Hospital.

Dr. Listrom is staff oral surgeon, Department of Oral Surgery, Toronto General Hospital.

Dr. Symington is professor and head, Department of Oral Surgery, University of Toronto, and head, Division of Oral Surgery, Toronto General Hospital.

Reprint requests to **Dr. Watson**, Department of Biomaterials, Faculty of Dentistry, University of Toronto, 124 Edward St., Toronto, Ont. M5G 1G6.

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1. Brånemark, P-I., Breine, U., Adell, R. et al. Intra-osseous anchorage of dental prostheses. 1. Experimental studies. *Scand J Plast Reconstr Surg* 3:81, 1969.
2. Brånemark, P-I., Hansson, B.O., Adell, R., et al. Osseointegrated implants in the treatment of the edentulous jaw. Experience from a 10-year period. *Scand J Plast Reconstr Surg* 11:Suppl. 16, 1977.
3. Adell, R. Clinical results of osseointegrated implants supporting fixed prostheses in edentulous jaws. *J Prosthet Dent* 50:251, 1983.
4. Adell, R., Lekholm, U., Rockler, B. et al. A 15 year study of osseointegrated implants in the treatment of the edentulous jaws. *Int J Oral Surg* 10:387, 1981.
5. Zarb, G.A. and Symington, J.A. Osseointegrated Dental Implants: preliminary report on a replication study. *J Prosthet Dent* 50:271, 1983.
6. Symington, J.M., Listrom, R.D., Watson, P.A. et al. Applications of osseointegrated implants: A preliminary report on 35 cases. *J Can Dent Assoc* 52:139, 1986.
7. Jemt, T. Modified single and short-span restorations supported by osseointegrated fixtures in the partially edentulous jaw. *J Prosthet Dent* 55:243, 1986.
8. Symington, J.M., Listrom, R.D., Watson, P.A. et al. Osseointegrated dental implants. *J Oral Health* 75:11, 1985.
9. Zarb, G.A. and Zarb, F.L. Tissue integrated dental prosthesis. *Quintessence Int.* 16(1):39, 1985.
10. Parel, S.M. Implants and Overdentures: The osseointegrated approach with conventional and compromised applications. *Int J Oral Maxillofacial Implants* 1:93, 1986.
11. Lundqvist, S., and Carlsson, G.E. Maxillary fixed prosthesis on osseointegrated dental implants. *J Prosthet Dent* 50:262, 1983.

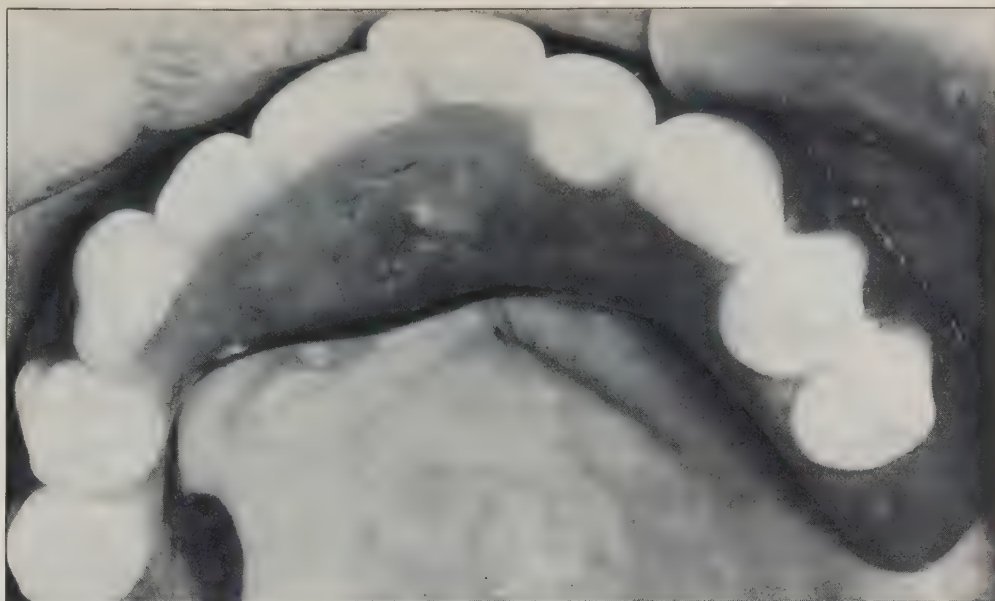


Fig. 4. Occlusal view showing removable component in place. Note the absence of palatal coverage.

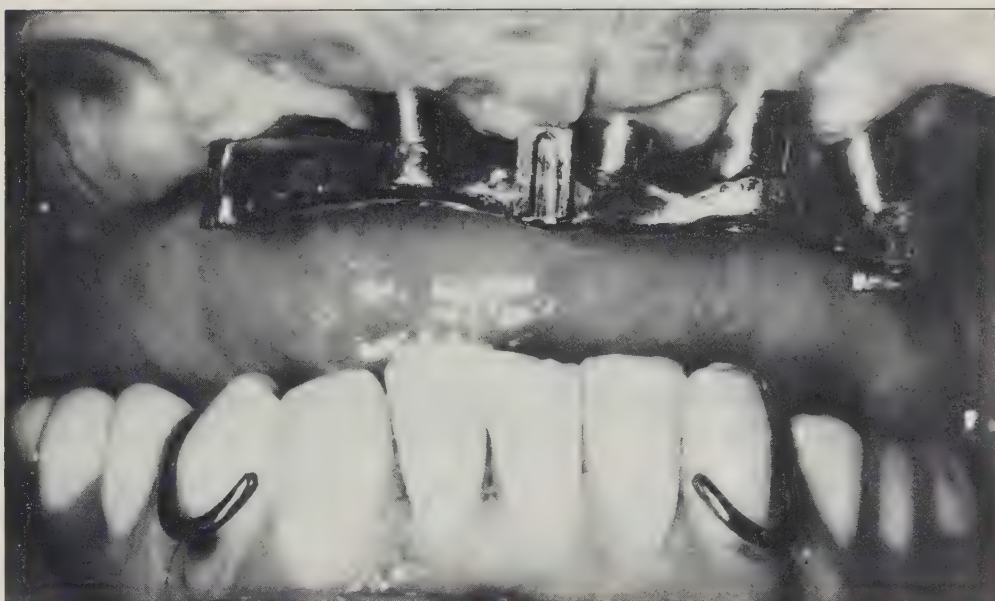


Fig. 5. Anterior view illustrating fixed component with good access to implants for oral hygiene measures.

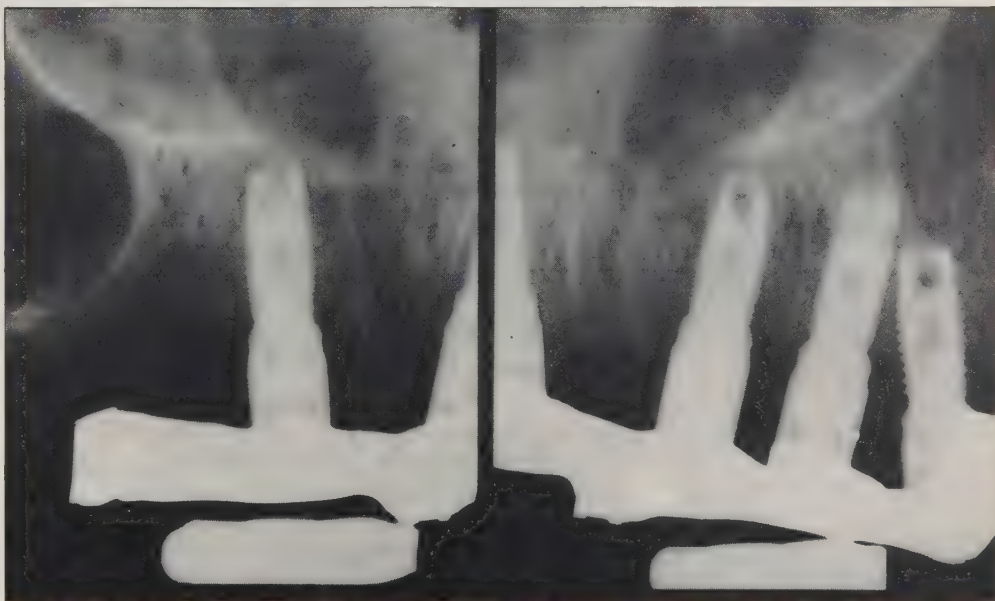


Fig. 6. Fifty-two month postoperative radiograph of the four supporting implants.

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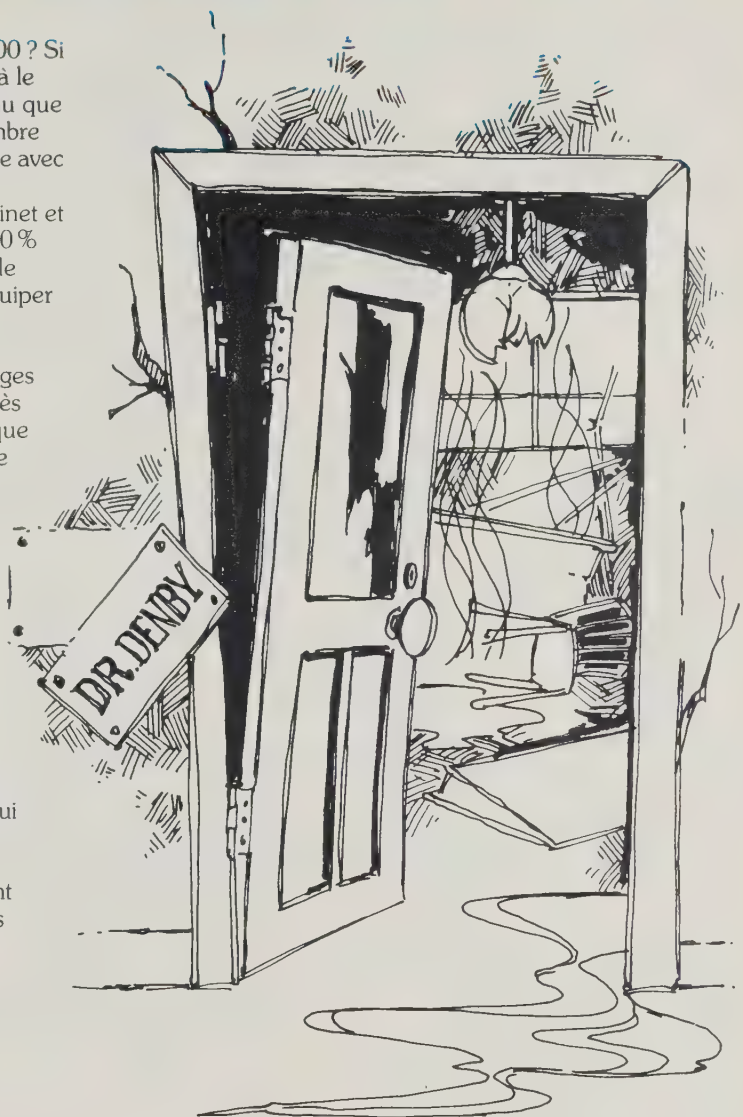
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THURSDAY EVENING, APRIL 21

- An Overview of the Dental Needs of the Aging Population
Saul Kamen, DDS

FRIDAY MORNING LECTURES, APRIL 22

- | | | |
|-------------------------|---|---------------------------------------|
| □ Drugs and the Elderly | □ The Impact of Attitudes on Older Persons's use of Dental Services | □ The Role of the Dental Team |
| <i>Saul Kamen, DDS</i> | <i>Asuman Kiyak
MA, PhD</i> | <i>Barbara Smith, RDH
BS, MDH</i> |
- Clinical Decision Making for the Geriatric Dental Patient
Douglas Berkey, DDS

FRIDAY AFTERNOON CONCURRENT SESSIONS, APRIL 22

SESSION ONE

- | | | |
|---|--|---|
| □ Prosthodontics for Elderly People | □ Promoting Appropriate Responses to Oral Symptoms | □ The Psychiatry of Old Age |
| <i>Michael MacEntee
LDS, Dip. Prosth.</i> | <i>Joe Holtzman, PhD</i> | <i>Colin Powell, MB
FRCP Edinburgh
FRCP Glasgow</i> |

SESSION TWO

- | | | |
|---|--|---|
| □ Restorative Dental Considerations for the Elderly | □ Portable Dental Services for the Elderly | □ Experiencing Dental Care: An Old Person's Point of View |
| <i>Douglas Berkey, DDS</i> | <i>Richard Shaver, DMD</i> | <i>Lynn Mitchell-Pedersen
RN, MEd</i> |

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Announcements

February/Février 1988

February 19: Scientific Session of the Academy of Dental Materials, Hillenbrand Auditorium, American Dental Association, Chicago, Illinois. A poster session is planned. For information concerning this contact Dr. Evan Greener, Dept. of Biological Materials, Northwestern University Dental School, 311 E. Chicago Avenue, Rm. 10-019, Chicago, Illinois, 60611, USA. For information concerning the meeting phone (312) 908-6887 or (312) 642-9570.

February 19-20: Orthodontics in an Aging Society The Fifteenth Annual Symposium on Craniofacial Growth at the University of Michigan at Ann Arbor. For registration or more information, write to: Cranifacial Biology, The University of Michigan, 1024 Kellogg-Dental, Ann Arbor, Michigan 48109-1078.

February 20-21: The Institute for Practice Development: How to Build a Quality Dental Practice for the 1990's in Orlando, Florida. Contact: The Institute for Practice Development, 7762 Silver Bell Dr., Sarasota, FL 34241 U.S.A.

February 20-27: Virgin Islands Dental Association Meeting Speakers: Dr. Ron Jordan — restorative, Dr. Gary Taylor —

endodontics, Dr. Merril Menser — implantology. Social and spouse program. For information, registration and group rates at this limited attendance convention, contact: Dr. Robert Brandon, 85 Lonsdale Drive, London, Ont. N6G 1T4 (519) 657-3368.

February 21-24: 123rd Chicago Mid-winter Meeting, Theme: "Values and Visions in Dental Practice." Contact: Chicago Dental Society, 30 North Michigan Ave, Chicago, Illinois 60602. Telephone (312) 726-4076.

February 26: Course by Dr. Terry Donovan, Contemporary Restorative Dental Materials — The pursuit of excellence. Calgary and District Dental Society. Contact: Dr. John Thompson 13 — 755 Lake Bonavista Drive S.E., Calgary, Alberta T2J 0N3. (403) 271-2777.

February 26: Posts & Cores: Getting to the Root of the Problem. One day symposium presented by the Professional Development Committee of the Ontario Dental Association in concert with Essential Dental Systems at the Skyline Hotel in Toronto, Ontario. For more information, contact: Professional Development, The Ontario Dental Association, 234 St. George St., Toronto, Ontario M5R 2P1 or phone (416) 922-3900.

February 27: Dentistry for the Immunodebilitated Patient — A New Frontier with Dr. Joseph M. Poland at the Omni Hotel, Charleston. For information, contact: Dr. Gordan Stine, Director, Dental Continuing Education, Medical University of South Carolina, 171 Ashley Ave., Charleston, S.C. 29425-2601.

February 27: Basic Dental Radiology at the College of Dental Medicine, Medical University of South Carolina. For information, contact: Dr. Gordan Stine, Director, Dental Continuing Education, Medical University of South Carolina, 171 Ashley Ave., Charleston, S.C. 29425-2601.

March/Mars 1988

March: The 5th Saudi Dental Convention at King Saud University, Saudi Arabia. For more information, contact: Azucena B. Bernardo, Clinic Secretary, College of Dentistry, King Saud University, P.O. Box 60169, Riyadh 11545, Saudi Arabia.

March 2-5: 32nd Annual Meeting of the American Academy of Dental Practice Administration. "Mission '88: Management Strategies for the 90's" at the Houstonian Hotel and Conference Center, Houston, Texas. For information, contact: Linda Doll, Executive Director, 6134 Cheena, Houston, Texas 77096. (713) 771-2477.

March 5-6: The Institute for Practice Development: How to Build a Quality Dental Practice for the 1990's in Miami, Florida. Contact: The Institute for Practice Development, 7762 Silver Bell Dr., Sarasota, FL 34241 U.S.A.

March 6-7: 65th Annual Session of the American Association of Dental Schools. Commercial and Educational Exposition in Montréal at the Convention Centre. Contact: A.A.D.S., 1625 Massachusetts Ave. N.W., Washington, D.C. 20036 U.S.A.

March 11-15: International Association for Dental Research meeting, Montréal, Québec. Contact: International Association for Dental Research, 1111 14th Street N.W., Suite 1000, Washington, D.C., 20005. (202) 898-1050.

March 19-20: The Institute for Practice Development: How to Build a Quality Dental Practice for the 1990's in Tampa Bay, Florida. Contact: The Institute for Practice Development, 7762 Silver Bell Dr., Sarasota, FL 34241 U.S.A.

March 16-19: The Annual Finnish Dental Meeting 1988 in Helsinki, Finland. For more information, contact: Taru Ohtola, Training Manager, Finnish Dental Society, Rautatielaisenkatu 6, Helsinki, Finland.

March 19-26: 20th International Alpine Dental Conference at Hotel Sofitel, Val d'Isère, France. For information, contact: International Dental Foundation, 24 Cadogan Square, London, SW1X 0JP England.

March 24-25: The Institute for Practice Development: How to Build a Quality Dental Practice for the 1990's in Orlando, Florida. Contact: The Institute for Practice Development, 7762 Silver Bell Dr., Sarasota, FL 34241 U.S.A.

March 25-26: Omer Reed. Quality of Life. Quality in Dentistry. Prosperity in Both sponsored by the Calgary and District Gnathological Society at the Palliser Hotel in Calgary, Alberta. \$350 Dentists. \$150 Assistants & Spouses. For more information, contact: The Faculty of Continuing Education, The University of Calgary, 2500 University Drive N.W., Calgary, Alberta T2N 1N4 and/or (403) 220-4718/4729.

April/Avril 1988

April: Annual Scientific Conference of the Irish Dental Association in Ireland. For more information, contact: Margaret Ferguson, Irish Dental Association, 29 Kenilworth Square, Dublin 6, Ireland.

April 7-10: 15th Congress of the Arab Dental Federation and 7th Jordanian Dental Congress in Jordan. For more details, contact: Dr. Irfan Sultan, P.O. Box 1326, Amman, Jordan.

April 9: Update – The Medically Compromised Patient with Dr. Barbara Steinberg at the Medical University of South Carolina. For more information, contact: Dr. Gordan Stine, Director, Dental Continuing Education, Medical University of South Carolina, 171 Ashley Ave., Charleston, S.C. 29425-2601.

April 9-10: Update – Partial Denture Design at the College of Dental Medicine, Medical University of South Carolina. For information, contact: Dr. Gordan Stine, Director, Dental Continuing Education, Medical University of South Carolina, 171 Ashley Ave., Charleston, S.C. 29425-2601.

April 9-10: The Institute for Practice Development: How to Build a Quality Dental Practice for the 1990's in Tampa Bay, Florida. Contact: The Institute for Practice Development, 7762 Silver Bell Dr., Sarasota, FL 34241 U.S.A.

April 9-16: 21st International Alpine Dental Conference at Hotel Annapurna, Courchevel, France. For information, contact: International Dental Foundation, 24 Cadogan Square, London, SW1X 0JP England.

April 11-15: Orthopedic Treatment with Functional Appliances in Malmö, Sweden. (English) For more details, contact: Lund University, Postgraduate Centre of Dentistry, Carl Gustafs vag 34, S-21421 Malmö, Sweden.

April 13-17: 1st International Congress on Maxillary Functional Orthopedics in Rio de Janeiro, Brazil. (English/Portuguese). For more information, contact: Secretaria Executiva do Congresso Congrex do Brasil, Rua de Ouvidor 60/614 – Centro 20040 – Rio de Janeiro – RJ – Brasil.

April 14-15: Annual Meeting of Alberta Society of Orthodontists and Western Canada Society of Orthodontists at Fantasyland Hotel in Edmonton, Alberta. Registration: Dr. J.L. Ares, 600 Empire Building, 10080 Jasper Ave., Edmonton, Alberta T5J 1V9 or phone (403) 421-1511.

April 14-16: 54th Annual Scientific Meeting of the Danish Dental Association & the Scandinavian Dental Fair Scandefa 88 For more information, contact: The Danish Dental Association, Committee for Postgraduate Education, 17 Amaliegade, Postbox 143, DK-1004 Copenhagen K, Denmark.

April 14-17: California Dental Association's Spring Scientific Session, Anaheim, California. Contact: Cissie Cooper, 818 'K' Street Mall, Post Office Box 13749, Sacramento, CA, 95853-4749, (916) 443-0505, (800) 421-8702.

April 21-22: GERIATRIC SYMPOSIUM "Times are changing – Are you ready? Clinical Management of the Elderly Patient" Winnipeg, Manitoba. Dentistry \$150, Allied Dental/Health Care Personnel \$75. Contact: The Division of Continuing Education, Faculty of Dentistry, University of Manitoba, 780 Bannatyne Ave., Winnipeg, Manitoba R3E 0W3. Tel: (204) 788-6331.

April 21-25: Third World Biomaterials Congress held in conjunction with the 14th Annual Society for Biomaterials, 20th International Biomaterials Symposium and the 10th Annual Meeting of the Japanese Society for Biomaterials in Japan. For more information, contact: Professor Yasuhia Sakurai, MD, Institute of Biomedical Engineering, Tokyo Women's Medical College, Kawada-cho 8-1, Shinjuku-ku, Tokyo 162, Japan.

April 25-26: Current Concepts in Periodontology in Malmö, Sweden. (English) For more information, write to: Lund University, Postgraduate Centre of Dentistry, Carl Gustafs vag 34, S-21421 Malmö, Sweden.

April 28-29: The Institute for Practice Development: How to Build a Quality Dental Practice for the 1990's in Orlando, Florida. Contact: The Institute for Practice Development, 7762 Silver Bell Dr., Sarasota, FL 34241 U.S.A.

April 28-May 1: Canadian Association of Oral and Maxillofacial Surgeons Convention at the King Edward Hotel, Toronto, Ontario. The theme is "Risk Management". For information, contact: Dr. Bernard Lyons, Secretary, 406-1368 Ouellette Ave., Windsor, Ontario N8X 1J9.

April 28-May 1: Alabama Implant Congress XIV in Birmingham, Alabama. For information, write: Alabama Implant Study Group, P.O. Box 4682, Birmingham, Alabama 35206 USA.

April 29-30: Precision Partial Dentures. A two day participation course sponsored by the Ontario Academy of General Dentistry at the Four Seasons Hotel in Ottawa, Ontario. \$380 AGD Members. \$395 non-AGD Members. Contact: Dr. John Miner (613) 235-8544.

May/Mai 1988

May 5-7: Second International Symposium on Feeding and Dentofacial Development will be held at the American Dental Association headquarters in Chicago, Illinois. For more information, contact: Second International Symposium on Feeding and Dentofacial Development, 919 North Michigan Ave., Chicago, IL 60611 U.S.A. Tel: (312) 266-8198.

May 8-11: 121st Annual Spring Meeting of the Ontario Dental Association at the Sheraton Centre, Toronto. For more information, please contact: Diana Thorneycroft, 234 St. George St., Toronto, Ontario M5R 2P1 or phone (416) 922-3900.

May 8-12: Biennial Congress of the International Association of Oral Pathologists in Philadelphia, Pennsylvania. For details, contact: Dr. W.H. Binnie, Chairman, Department of Oral Pathology, Baylor College of Dentistry, 3302 Gaston Avenue, Dallas 75246 Texas U.S.A.

May 14-17: 24th Annual Convention of the Jamaica Dental Association in Ocho Rios, Jamaica. For information, write to: Dr. C.D. Barrett-Boyne, Convention Chairman, Jamaica Dental Association, P.O. Box 19, Kingston 5, Jamaica West Indies.

May 15-20: 25th Australian Dental Congress, Sydney, Australia. "An international meeting during Australia's bicentennial". A limited number of brochures are available at the CDA, or contact: 25th Australian Dental Congress, P.O. Box 29, Parkville, Victoria, Australia, 3052.

May 20-22: Periodontal Surgery - A Didactic and Laboratory Exercise at the College of Dental Medicine, Medical University of South Carolina. For information, contact: Dr. Gordan Stine, Director, Dental Continuing Education, Medical University of South Carolina, 171 Ashley Ave., Charleston, S.C. 29425-2601.

May 27-28: The Human TMJ - A Didactic Exercise with Dr. James River and Dr. Richard Dom at the College of Dental Medicine, Medical University of South Carolina. For information, contact: Dr. Gordan Stine, Director, Dental Continuing Education, Medical University of South Carolina, 171 Ashley Ave., Charleston, S.C. 29425-2601.

June/Juin 1988

June 2-5: 88th Annual Conference of the Canadian Lung Association at Hotel Newfoundland, St. John's, Newfoundland. For information, contact: A. Les McDonald, Director, Health Education and Program Services, Canadian Lung Association, 75 Albert St., Suite 908, Ottawa, Ont. K1P 5E7 or tel. (613) 237-1208.

June 3-4: Operative Dentistry at the College of Dental Medicine, Medical University of South Carolina. For information, contact: Dr. Gordan Stine, Director, Dental Continuing Education, Medical University of South Carolina, 171 Ashley Ave., Charleston, S.C. 29425-2601.

June 3-5: 1988 Canadian Academy of Periodontology Annual Meeting, Pan Pacific Hotel, Vancouver, B.C. Speakers: Dr. Jan Lindhe: Current Concepts of the Etiology and Pathogenesis of Periodontal Disease. Dr. Stan Sapkos: The Role of the Periodontist in Implant Therapy. Contact: Dr. K. McAnulty, #304-126 East 15th St., North Vancouver, B.C. V7L 2P9. (604) 980-5822.

June 8-13: Hong Kong Dental Association/China Medical Association Joint Dental Symposium in Beijing, People's Republic of China. For details, contact: Mrs. Yvonne Ng, Executive Secretary, Hong Kong Dental Association, Duke of Windsor Social Service Building, 8/F, 15 Hennessy Road, Hong Kong. Tel: 5-285327.

June 13-15: Dental Implants Consensus Development Conference in Bethesda, Maryland sponsored by the National Institute of Dental Research, the Food and Drug Administration and the NIH Office of Medical Applications of Research. To register, contact: Conference Registrar, Prospect Associates, Suite 500, 1801 Rockville Pike, Rockville, Maryland 20852. (301) 468-MEET.

June 16-18: 1988 Convention of the College of Dental Surgeons of British Columbia at the Vancouver Trade and Convention Centre. Topics cover Practice Management to Practical Perio. For further information, contact: College of Dental Surgeons of BC, 1125 West 8th Ave., Vancouver, B.C. V6H 3N4 or phone: (604) 736-3621.

June 21-24: 53rd Annual Meeting of the Pacific Coast Society of Prosthodontists in Sun River, Oregon. For more information, contact: Dr. Richard Frank, Prosthodontics SM-52, University of Washington, Seattle, Washington 98195 U.S.A.

July/Juillet 1988

July 1-3: British Dental Association's Annual Conference, Harrogate International Conference Centre, Harrogate, Yorkshire (UK). "Facing the Future". Contact: Linda Bridges, Conference Office, 64 Wimpole St., London, England. W1M 8AL.

July 1-3: Florida National Dental Congress sponsored by the Florida Dental Association will be held at the Marriott's Orlando World Center, Orlando, FL. For more information, contact: Betty Waggener, Director, Florida National Dental Congress, 3021 Swann Ave., Tampa, FL 33609 U.S.A. Tel: (813) 877-7597.

August/Août 1988

August 7-11: Ninth Congress of the International Association of Dentistry for the Handicapped, Philadelphia, PA. Contact: Public Relations, (215) 576-2303, Abington Memorial Hospital, Abington, PA. 19001.

August 8-13: Preventive Dentistry and Epidemiology 1st International Conference sponsored by the Dental Health Center of Karlstad Sweden together with a Course on "Table clinics and demonstrations of preventive materials, programs and methods". For more information, contact: The Preventive Dental Health Center, c/o Hjärnbruket, Box 9055, S-650 09 KARLSTAD, Sweden. Tel: 46 054-13 20 10.

August 12-14: 4th Annual A.C.O.I. Symposium sponsored by the American College of Oral Implantology and the International Congress of Oral Implantologists in Denver, Colorado. For further detail, contact: Margaret M. Jackson, Executive Director, I.C.O.I., 248 Lorraine Ave., 3rd floor, Upper Montclair, N.J. 07043 U.S.A.

August 19-21: 40th Annual Scientific Meeting of the Canadian Association of Orthodontists in Edmonton Alberta. "Future Perspective in Orthodontics". For more information, please contact: Dr. Terry Carlyle, #1525 Weber Centre, 555 Calgary Tr. S., Edmonton, Alberta T6G 5P9. (403) 435-3641.

August 21-24: Canadian Dental Association's Annual Convention, at the Edmonton Convention Centre, Edmonton, Alberta. Contact: Linda Teteruck, Canadian Dental Association, 1815 Alta Vista Dr., Ottawa K1G 3Y6. (613) 523-1770.

August 21-25: New Zealand Dental Association's Biennial Conference, Christchurch, New Zealand. Contact: Dr. E.A. Cope, Conference Secretary, 200 Cashel Street, Christchurch 1, New Zealand.

September/Septembre 1988

September 7-9: Bristol 88 World Dental Conference University of Bristol, England, U.K. Decisions in Forward-Looking Oral Health Care. For information contact: Mr. B.P. Matthews, Bristol 88 World Dental Conference, University of Bristol, Senate House, Bristol BS8 1TH ENGLAND, U.K.

September 23-25: California Dental Association's Fall Scientific Session, San Francisco, California. Contact: Cissie Cooper, Director, Scientific Sessions, CDA, 818 "K" Street Mall, P.O. Box 13749, Sacramento, California, 95853-4749. (916) 443-0505.

October/Octobre 1988

October 8-14: ADA/FDI Joint 1988 World Dental Congress Dentistry: Caring for the World at Washington, D.C.

For more information, contact: Congress Secretariat, ADA/FDI Joint 1988 World Dental Congress, c/o American Dental Association, 211 East Chicago Ave., Chicago, Illinois 60611 USA or FDI Headquarters, Fédération dentaire internationale, 64 Wimpole St., London W1M 8AL, United Kingdom.

October 9-14: International Workshop on Cranio-facial Trauma sponsored by the Australian Cranio-Maxillo-Facial Foundation. For information, contact: Mrs. D. Moody, Executive Officer, 226 Melbourne St., North Adelaide, S.A. 5006, Australia.

October 25-27: Medical/Hospitech 88 - 2nd International Medical, Hospital and Dental Equipment and Facilities Exhibition in Bangkok, Thailand. For more information, contact: SHK International Services Ltd., 22/F., 151 Gloucester Rd., Hong Kong. Telephone: 5-8326100.

October 26-29: 42nd Annual Meeting of American Academy for Cerebral Palsy and Developmental Medicine Deadline for free papers: February 12, 1988. Royal York Hotel, Toronto. INFO: AACPDM, P.O. Box 11086, Richmond, Virginia 23230 USA.

November/Novembre 1988

Novembre 21-25: Festival international du Film et de la Vidéo dentaires - XIèmes Journées dans le cadre du Congrès International de l'Association Dentaire Française. Bulletins d'inscription au concours devront parvenir au Secrétariat avant le 15 février 1988. Renseignements et inscriptions: Dr. M. Dolovici, Secrétaire générale du Festival international du Film et de la Vidéo dentaires, 92 avenue de Wagram, 75017 PARIS.

Miscellaneous

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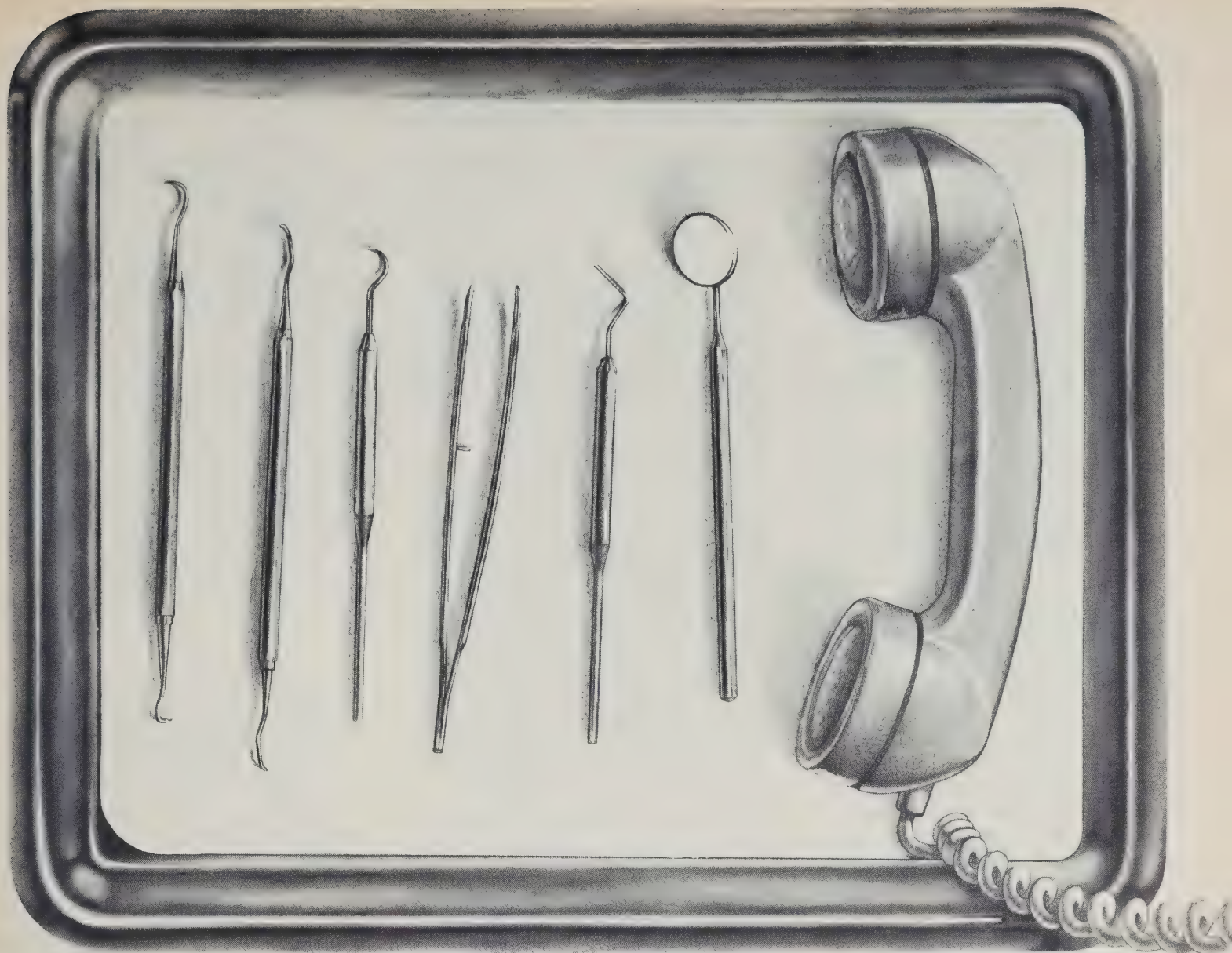
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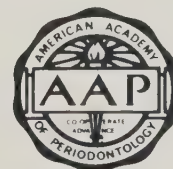
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BRITISH COLUMBIA—100 Mile House: Associate required. High gross practice requires an associate with partnership potential. We offer a generous percentage and flexible terms. The new associate would be replacing a partner with approx. 2500 recall patients. For more information, please call (604) 395-3131 days or (604) 395-3996 evenings.

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ONTARIO—Hamilton: Associateship available for a recent graduate or a graduating dentist. Office is general practice, well equipped and busy. This will be an excellent opportunity that hopefully will become a long term association. Reply to CDA Box 2382.

ONTARIO—Ottawa: Dentist planning retirement in five to ten years seeks compatible flexible associate with view to partnership and purchase. Please send resumé giving relevant details of personal and academic life. Please reply in confidence to CDA Box 2398.

ONTARIO—Pembroke: Established general and family practice requires a capable, conscientious and ambitious associate immediately. Excellent opportunity to practise all phases of dentistry. Present associate returning to graduate studies. Hospital privileges available. Many new patients, plus existing files to pass on to new associate. Contact Dr. B.L. Jurmalietis at (613) 732-4440.

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- Copies of contents pages of the most current dental journals. There is a monthly charge of \$5.00 to non-members for this service.
- Photocopies of journal articles. All reasonable requests will be processed free of charge to CDA members; there is a \$5.00 administrative fee for non-members.
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by Jean Cives

Waste not, want not

My partner said to me that he had been forced to move "my stuff" as he called it, out of the lunch room cupboards into the furnace room, to make room for his associate's "valued possessions". I was offended mightily. His "valued possessions" versus "my stuff"! In those boxes were an old lab handpiece for a slip joint belt driven dental engine — at the ready just in case belt drives come back, a jig I bought for relining dentures, another jig for relining dentures in case the first one did not work, at least a year's supply of denture adhesive reaching maturity having been stored for ten years, an unidentified upper denture, 3 casts of interesting teeth, a box of broken instruments and such like, making up three cartons full.

The dentist's cupboards are filled with such personal treasures, most put aside for that day of need in the future. My partner's associate, I realized, just a young buck dentist, was beginning his collection, and I had this urge to give counsel and advice to the young. Oscar Wilde once said that the best thing to do with good advice is to hand it on as quickly as possible, so instead I left mumbling to myself and decided to advise all readers of the need for organization of dental trivia, and to put a plea to dental manufacturers to diversify their materials.

My uncle, a genial old guy as I knew him, once showed me the toys he had in his car trunk. He had 3-4 extraction forceps — just great for pulling nails out of tires he said. I presumed with his selection he could extract from one inch to six inch nails, with or without bends in them. As well he had several hoes, hatchets and chisels for adjusting the ignition, and for repairing the mechanism for lowering the windows. He agreed that in car assembly plants they use octopuses to assemble these. Zinc oxide-eugenol was there also



— ready for leaky windshields or passers-by with toothache. I was most impressed — here was a dentist with all his garbage not in his office cupboards, but on the road!

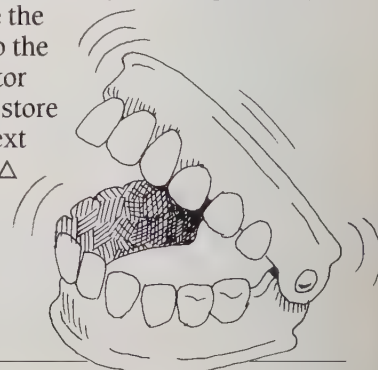
What important stuff we hoard! But we put to other uses a variety of materials. Have you ever received a telephone message from a dental office other than on a rubber base mixing pad, or a Insurance Claim form cut in half! Have you ever examined a dentist's kitchen and noted the pot handles repaired with denture tray material? Look in his wife's fridge and see how he repaired the broken plastic bracket with denture reline material. I knew one dentist who mixed his home brewed beer in the wife's washing machine (an old type which had a roller), and to do something tricky with the pump, he had cast a metal plug in his laboratory. Did you ever check the headlights in a dentist's wife's old car? Notice how the rust has destroyed all the brackets holding the light in place and how the pink plastic reline material keeps these lamps solid until the dentist wins a

lottery, and his wife can have his old car instead.

Just like the "small is beautiful" slogan, and in the interests of economy, I want manufacturers to begin the Alternative Purposes and Tasks Program — APT for short. In each box of material would be a short note explaining how to use Dental Products for something else. Imagine sealing up your windshield, a leaking roof at the cottage or the bilge pump on your cruiser with left-over rubber base material (remember to follow the enclosed instructions under the APT program). Consider repairing that place in the bathroom where you tried to put up that coat hook, and ended up with a thumb size hole — use a little bit of Sure-set dental stone mixed with wallpaper glue (don't laugh, it works!).

My next campaign will be to ask your friendly Dental Association to recognize such proven uses, and provide not only the Seal of Recognition or Acceptance, but also a Good Housekeeping and Auto Repair Seal!

The end of my confrontation with partner and youth? I did nothing. I was poised to drop it all — crash — into the garbage when I saw the reline jigs. I thought of Mrs. S. who is adamant that no one has seen her without a denture except her anesthetist and obstetrician, and me about every three years as I reline her denture on a Saturday morning. Perhaps I could give the whole lot to the young Doctor and he can store it for the next 20 years. Δ



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Imagine...a system where you could:

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Now, suppose that this system was:

- proven with over 20 years of extensive, documented scientific research and clinical experience
- the first one granted provisional ADA acceptance and the first to receive a Notice of Compliance from the Canadian Health Protection Branch of Health and Welfare Canada
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- so affordable that you could recover the cost of adding it to your practice on your first case
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Lindberg & Homburger Dental Laboratories Ltd.
Toronto (416) 924-6684

Micro-Dent Laboratories Ltd.
Toronto (416) 745-1166

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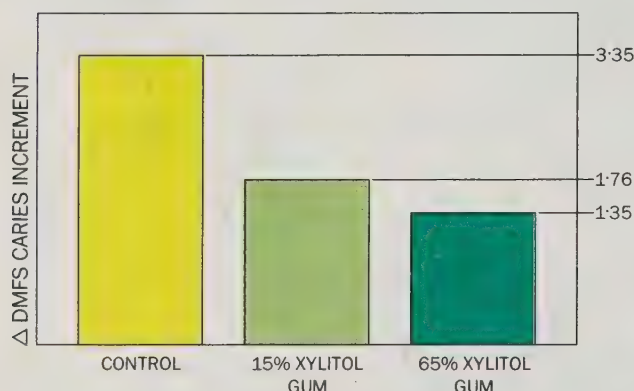
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Now, new studies prove that Trident with **xylitol** helps fight cavities.

Xylitol is a naturally-occurring sweetening agent found in plants, vegetables, even the human body. For years, scientists have suspected that this natural substance may play an active role in cavity prevention. Now, new clinical studies prove it.

Independent trials¹ conducted by international



This one-year study conducted by the Montreal General Hospital and the University of Montreal, Department of Preventive and Community Dentistry, on 433 eight and nine year old Montreal children clearly demonstrates a protective effect of xylitol-containing chewing gum in a school caries preventive programme. (The control group had a normal diet and preventive programme.)

institutions such as the World Health Organization have substantiated existing evidence, gathered through concentrated research over the last ten years, that indicates xylitol cannot be metabolized by decay-causing microflora in the oral cavity.

Trident Sugarless Gum, which contains xylitol², is now being recognized as more than just a harmless treat. When used at least twice a day, it has been proven to be an important adjunct to the regular oral hygiene programme of brushing, flossing, rinsing, and having fluoride treatments plus biannual dental check-ups.

Now, you can recommend Trident as an effective way to reduce the threat of acidogenic action after carbohydrate snacking, especially for young, caries-prone patients. And, the great new taste of Trident means that patient compliance is assured.

Trident. More than just a treat.



MORE THAN JUST A TREAT

¹ Reg. T.M. Warner-Lambert Company, Adams Brands Mfg. Auth. User.

²The Finnish Xylitol Study, 1982-1985. The French Polynesian WHO Study, 1979. The WHO Hungarian Study, 1981-1984. The Montreal Chewing Gum Study, 1987. Case studies available upon request.

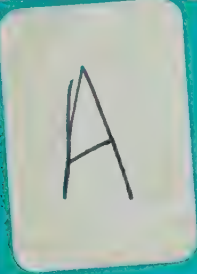
³Trident Peppermint, Cinnamon, Freshmint, and Fruit flavours only.

March
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1988
Vol. 54
No. 3

JOURNAL

Canadian
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INTRODUCING NEW CREST FOR KIDS SPARKLE GEL



TOUGH ON CARRIES – A LOT OF FUN FOR KIDS.

In the war against cavities, the very first battle is getting kids to brush. Research shows that 90% of children need to be reminded to brush.¹ Quite a challenge!

And now Crest meets that challenge with new Crest For Kids, the toothpaste with the sparkly look and flavour that was specially designed to make brushing fun. Tested with children 6 to 12, Crest For Kids was proven to have taste and sparkle appeal.¹ So they actually rush to brush with

this great new Crest.

But there's even better news. Crest For Kids provides the same excellent anticaries protection you have come to expect from Crest.

To help reinforce your message to kids of the importance of proper oral health, we've developed a program consisting of a variety of fun-filled materials for office and home. To get more information or order your materials, just call 1-800-668-0153.

In the meantime, why not

have your own kids try Crest For Kids? We think the results will convince you it's a winner.

1. Data on file at Procter & Gamble.

Crest *For Kids*
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**RECOMMEND
THE SERIOUS
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"Crest contains sodium fluoride which is, in our opinion, an effective decay preventive agent, and is of significant value when used in a conscientiously applied program of oral hygiene and regular professional care." CANADIAN DENTAL ASSOCIATION

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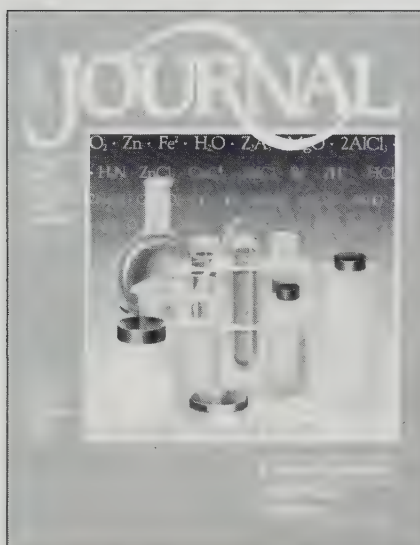
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Our patients expect it!!

When CDA in April 1985 launched the Dental Awareness Program it initiated the single, most comprehensive communications event in the history of the Association. The primary goal of the entire Program was to improve the quality of the profession's communication with the public to whom we are dedicated.

The Dental Awareness Program has been a success story from Day One. Dental Health Month, the Consumer Guide, What Every Adult Should Know About Dental Health, The Dental Health Check-Ups have all been effectively reaching the public over the past three years.

Talk about success! The very first mailing of CDA's/Colgate-Palmolive's "First Teeth" Program in October 1987 resulted in over 5,000 requests for material. But we can do more!

This issue of the Journal emphasizes and lists the great variety of materials and the superb quality programs available from CDA. The task now facing us as dentists is to utilize them for the greatest benefit of our patients.

There is a greater challenge during this year's Dental Health Month than merely ordering and distributing more material. The challenge faces us — the dentists — to better communicate personally with our patients. A 1983 study released by the Opinion Research Corporation indicated that although the dentist assumes the public receives most of its dental health information from the media, the public expects to get that information from dentists.

The public places great trust in dentists. Numerous polls have shown this to be a fact. We lead the professions in that "integrity" factor. Now the task is to fulfill that trust — to give the patients that which they need and want — more dental information.

The average patient is only in our office two or three hours a year. It is essential to make that time count. Take the time to inform your patient of the quality of life that results from good oral health. Dental Health is Good For Life. Alert and train your staff to be more effective communicators; have CDA educational materials available and explain their contents. Our patients expect it!

P. Ralph Crawford, DMD
Editor, JCDA

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President's Column



Smooth teamwork is essential

How healthy is your team? The past few years have seen an increase in the tension level among the different members of the dental team. Dentists, hygienists, assistants and laboratory personnel are all vital components in the oral health delivery system in most offices today. However the political climate between the groups needs some nurturing, if we are to attain the objective of working harmoniously to improve and preserve the best possible oral health status for our patients.

The oral health industry has become a multi-billion dollar business in North America, and it has reached this stage in an inordinately short period of time. As our numbers have grown, everyone who participates in this industry has attempted to carve out, organize and preserve an identifiable role. These roles are based on criteria established by appropriate, recognized authority, whether legislative or professional, and involve a multitude of educational programs.

The expansion of the individual components within the system is a natural extension of everyone's desire to grow, utilize their abilities and optimize the economic benefits to be derived from their chosen field. Dentists, hygienists, assistants, and technicians have all attempted to improve their local and national organizations, attract membership, define their roles in the changing pattern of health care delivery, and strengthen their voice in the continuing debate on health care policy.

The issues we face are complex; they include changing patterns of practice, economic disparities, education and accreditation standards, provincially and nationally, as well as the emerging and potentially explosive issue of regulation. As our national organization, the Canadian Dental Association is ready to participate in solutions to these problems and believes that solutions can only come out of an approach to issue resolution that is grounded in an attitude of mutual respect. All of us have important choices to make. Let us not make the mistake of allowing debate to develop on *any* issue that becomes hostile, emotional and destructive. If we allow antagonism to develop, it is the public that will suffer. To paraphrase Dr. James Saddoris, President of the American Dental Association, "If we allow ourselves to hurt the people we are pledged to serve, we are only hurting ourselves".

*Ron J. Markey, DDS, MSD
President of the Canadian Dental Association*

The 1987 FDI World Congress in Buenos Aires, Argentina

Robert N. Hicks, DDS, MS,
FDI National Treasurer — Canada

This report was prepared by Dr. Hicks as an information item for the CDA Interim Board of Governors meeting and as a news item for this Journal

An interesting and exciting 75th Annual World Dental Congress was successfully staged by the Argentinian organizing committee in Buenos Aires October 24-30 last. The week was filled with varied scientific presentations and FDI business meetings. Approximately 4,000 dentists were registered at the Convention and about 2,250 of those participating were from Argentina.

At the General Assembly business meetings, Canada was officially represented by Dr. Ron Markey, CDA President; Dr. Robert Hicks, FDI National Treasurer — Canada, and Dr. George Beagrie, Dean of Dentistry, University of British Columbia, who has served as Chairman of FDI's Commission on Dental Education and Practice. Alternate delegates were Brig.-General James Wright, Brig.-General Fred Begin and McGill University's Dean of Dentistry, Dr. Ralph Barolet. Mr. Jardine Neilson, CDA's Executive Director, was also in attendance.

One of the highlights of the Congress for the Canadian Delegation was to witness the election of Brig.-General William Thompson of Canada as Treasurer of the Federation Dentaire Internationale. Dr. Thompson, a past president of the CDA, has been active for several years in the FDI, rising to the level of Counsellor a few years ago. His election by peers from around the world, displayed the high esteem they hold for our dental colleague from Canada.

Recognition of the significant work and support provided to the FDI by another Canadian, was highlighted when Professor George Beagrie was awarded the FDI's Merit Award by the General Assembly. Dr. Beagrie has recently retired as Chairman of the Commission on Dental Education and Practice.

Brig.-General James Wright of Canada was re-elected as Vice-Chairman of the Commission on Dental Forces Dental Services and continues to act as the

leader of Working Group No. 4 — Dental Equipment in the Field.

The foregoing makes it obvious that Canadian dentists can be very proud of these colleagues who hold high level positions in the international dental world, through the FDI.

Other Canadian participation

Other Canadians also participated in the following FDI Commissions:

Commission on Oral Health, Research and Epidemiology

- ☐ Dr. M. Williamson ☐ Dr. M. MacEntee
- ☐ Dr. W. Bedford ☐ Dr. D. Kandelman

Commission on Dental Education and Practice

- ☐ Dr. G. Beagrie — Chairman
- ☐ Dr. E.R. Ambrose ☐ Dr. G. Kravis
- ☐ Dr. D. Donaldson ☐ Dr. M. MacEntee
- ☐ Dr. R.B. Gilliland

Commission on Dental Products

- ☐ Prof. D.S. Smith ☐ Dr. G. Lovas
- ☐ Dr. H. Bridges ☐ Dr. C. Torneck
- ☐ Dr. F. Pulver ☐ Dr. R. Barolet

Commission on Dental Forces Dental Services

- ☐ Brig.-General J. Wright — Vice-Chairman
- ☐ Brig.-General F. Begin

Scientific Program

The Scientific Program in Buenos Aires was one of the most extensive ever. The three main themes were:

- ☐ Occlusal Function and Treatment Needs — Myths and Realities
- ☐ Modern Restorative Dentistry — The Key to a Successful Practice
- ☐ The Practical Approach to Periodontal Treatment

In addition, Open Sessions were organized by FDI Commissions i.e.:

- ☐ Identification of High Caries Risk
- ☐ Changing Patterns in Oral Health and Implication of Oral Health Manpower

- ☐ FDI/WHO Guidelines on Manpower Planning

A Military Conference was also held by the Commission on Dental Forces Dental Services.

A special presentation by Dr. Jens Pindborg of Denmark on AIDS was extremely well attended and was the subject of much media interest.

Highlights of the FDI Business Meetings

Finance

The 1986 Financial Statements showed a deficit of U.S. dollars \$9,973. While revenue was greater than in 1985, expenditures were also greater than 1985 due to budgeted headquarters office expenses.

Actual income in 1986 was less than the budget estimated due to a reduction in the number of individual dentists joining FDI. Canada was identified as one of the countries who suffered a significant loss in individual FDI membership in 1986. When individual memberships are reduced, pressures are placed on supporting member national dental associations, to provide the necessary operating funds.

A rebate program, which benefits those countries that increase their annual individual FDI membership, was approved in an effort to improve individual member support. With a reduced base to work from, Canada is in a good position to take advantage of this new rebate offer with an aggressive FDI membership program.

Staging the FDI Congress in Latin America produced significant first-time membership and participation from many Latin American dentists. In addition, Ecuador, Brazil, El Salvador, Venezuela and Nicaragua all became new Supporting Members of FDI. These factors help, all be it in a small way, to broaden the financial support of FDI.

Turkey also joined. Now there are seventy-six (76) countries represented through their dental associations in FDI.



New leaders of the *Fédération Dentaire Internationale* who took office at the FDI World Congress in Buenos Aires, are, from the left: Dr. Ruperto Gonzalez Giralda of Spain, who is now President-Elect; Dr. Carlton H. Williams of the United States who is President and Dr. William R. Thompson of Canada, who was chosen to be FDI's Treasurer.

The General Assembly approved a 1988 Budget, showing income of U.S. dollars \$924,500 and expenditures of \$922,680 (U.S.).

The expenditure budget has been increased 8.42%.

FDI/WHO Partnership

An "Expanded Oral Health Program through Partnership between FDI and the World Health Organization" was approved.

A new document was presented, following concerned debate in 1986, which specified that any involvement with WHO, by the supporting member associations of FDI, would be entirely voluntary. The Advisory Board of the Program is structured with a majority of FDI members. The cost to the FDI will be minimal.

Canada has participated in this type of program on a voluntary basis in St. Kitts and in Haiti. This new structure is familiar to Canada and we encourage other nations to participate in FDI/WHO sponsored projects.

A series of materials designed to equip and inform dentists in the face of the AIDS epidemic is to be launched by the two organizations in 1988.

FDI Task Force Report

All business meetings of the FDI were dominated by the report of the Task Force Committee set up in Manila in 1986. The Committee's report made extensive

recommendations for change within the FDI's organization and structure. The objectives of the report were to improve the effectiveness of the organization, to improve communication within the organization, to improve and stabilize the financial support and to make more efficient the business procedures during the Annual FDI Congresses.

While many of the Task Force recommendations were implemented at the Buenos Aires meeting, a number of well debated issues did not get majority support at the meeting.

On the last day of the business meetings, the General Assembly instructed the FDI Council to hold an extraordinary meeting in London in May, 1988 so that it can formulate draft amendments to the Constitution which can be considered at the 1988 Washington, D.C. Annual FDI Congress. These amendments will affect supporting membership subscriptions (i.e. the financial "formula" used to determine individual national associations supporting member FDI dues) and the structure of the FDI including the Scientific Commissions and certain committees.

Future Congresses

The 76th FDI Annual World Dental Congress will be held in Washington, D.C., U.S.A. on October 8-14, 1988. This meeting will be held jointly with the



ADA/FDI

WASHINGTON, DC

DENTISTRY:
CARING FOR
THE WORLD

OCTOBER 8-14, 1988

annual session of the American Dental Association.

It is important to note that Canadian dentists should register for this FDI Congress before June 30, 1988.

The ADA/FDI Joint 1988 World Dental Congress enrollment fees paid before June 30, 1988 are:

ADA Affiliate Member and FDI Member
\$100.00 U.S.

CDA Member and FDI Member \$200.00
U.S.

Dental Student \$50.00 U.S.

Accompanied person \$50.00 U.S.

All fees are increased by U.S. dollars
\$50.00 as of June 30, 1988.

This early registration recommendation will be publicized in the CDA Journal for the benefit of our members.

Future Congress sites are:

1989 Amsterdam, Netherlands,
September 2-8

1990 Singapore

1991 Milan, Italy

1992 Frankfurt or Berlin, West Germany

1993 Gothenburg, Sweden

1994 Vancouver, Canada

1995 Hong Kong

It is important to note that, following a meeting between FDI and CDA representatives in Buenos Aires, Canada received the final approval to host the 1994 FDI Annual World Dental Congress.

Technical Reports

The following FDI Technical Reports were approved at the 1987 meetings:

a) Commission of Dental Education and Practice

The capital impact of Changing
Disease Trends on Dental Education
and Practice.

- b) **Commission on Dental Products**
Recommendations in Dental Mercury Hygiene
Guide to Use of Cements for Luting Fixed Restorations
- c) **Commission on Oral Health, Research and Epidemiology**
Review of Methods of Identification of High Caries Risk Groups and Individuals

Election of Officers

The following persons were elected to the senior offices of the FDI:

President — Dr. C. Williams — U.S.A.
President-Elect — Dr. R. Gonzales — Spain
Vice-Presidents — Dr. F.P. Bowyer — U.S.A.
Dr. L. Telivuo — Finland
Treasurer — Dr. W. Thompson — Canada
Counsellors — Dr. H. Erni — Switzerland
Dr. P. Hanedoes — Netherlands
Legal representative — Dr. S. Hanson — Belgium

In conclusion, the 1988 FDI Annual World Dental Congress in Buenos Aires was a true success. With concerns of poor attendance existing prior to the meeting, the Latin American dentists strongly supported the event to turn it into the success it was. Canada's attendance — eighty-three (83) dentists — was the seventh highest among those nations attending. △

Did you know?

The funds left by the Tooth Fairy for a lost tooth have been keeping pace with inflation!

Findings after a recent survey conducted by Rosemary Wells, a former professor of dental health at Northwestern University, reveal that the Tooth Fairy is currently leaving \$1.00 (U.S.) for every lost tooth. In 1983, the average fee dispensed was 85 cents.

Further historical research has revealed that the Tooth Fairy left, on the average, only 12 cents in the year 1900.

The tradition also has another facet. It seems that the good fairy prefers coinage. Seldom does he or she leave paper currency.



Other FDI highlights



Prominent Canadian delegates at the FDI World Congress in Buenos Aires were CDA President Ron Markey, left and Dr. Robert N. Hicks, National Treasurer — Canada, right, who chatted with the Canadian Ambassador to Argentina, Louise Frechette, centre.

The new FDI President is Dr. Carlton H. Williams of California, who will hold the office for two years. The President-Elect is Dr. Ruperto Gonzalez Giralda of Spain, who was formerly the FDI Treasurer. Canada's Dr. William R. Thompson has succeeded him as FDI Treasurer.

Colorful opening

At the Congress' opening ceremony in Luna Park Stadium, Buenos Aires, an audience of several thousands were welcomed by Dr. Roberto Lemme, Chairman of the organizing committee. Outgoing FDI President Dr. Ariel Gomez of Argentina spoke of the importance of the World Congress in Latin America at the time of colossal economic crisis and political change. Argentina's Minister of Health and Social Action, Dr. Ricardo Barrios Arrechea welcomed the world's dentists to his country on behalf of President Raul Alfonsin. He then announced among other oral health measures, that in 1988, nearly seven million citizens of Buenos Aires would have fluoridated drinking water.

FDI/WHO partnership

Dr. Halfdan Mahler, Director General of the World Health Organization (WHO), was the guest speaker at the opening of the Congress. He told delegates that the moment had arrived when the FDI and

the WHO could enter into a real partnership to work even more closely together for better health through oral health. This would be a voluntary relationship between an international, non-governmental body and an intergovernmental one, with each retaining its independence. Oral health personnel, said Dr. Mahler, were well positioned to disseminate a wide range of health messages besides those which focussed on oral health. The urgent program to combat AIDS was the prime example of how the two organizations could work in partnership. △



Seen during the FDI '87 dinner and ball in Buenos Aires are, standing, left rear, Dr. Philip Simon, of Glace Bay, N.S. and his wife Ruth, greeting CDA President Dr. Ron Markey and his wife, Diane.

Majority of U.S. GPs use gloves and masks, AGD survey shows

As the fear of AIDS heightens, gloves, masks and glasses appear to be becoming the norm in dental offices across the United States, according to a survey of members announced recently by the Academy of General Dentistry, (AGD), a continuing education organization which represents about 30,000 dentists in Canada and the United States.

The survey found that 98.2 per cent of Academy members who responded use gloves, 96.4 per cent wear protective eyewear and 89.8 per cent wear masks. A random sample of 1900 AGD members were sent questionnaires using systematic procedures to ensure unbiased selection and balanced representation. A total of 785 responses was received by the cut off date, of which 765 were

usable, representing an effective response rate of 40.2 per cent.

"The headlines last summer about a New York dentist apparently acquiring the AIDS virus from working on a patient hit home with dentists across the country," said Academy President Edward D. Barrett, DDS. "We believe the Academy survey reflects a dramatic change in attitude toward infection control among general dentists."

The use of infection control procedures was a topic of considerable discussion at the Academy's 1987 meeting in Seattle, resulting in a resolution endorsing the practice of infection control procedures in the dental office.

Dentists are regularly exposed to patients' blood, which has been identified

as a transmitter of the AIDS virus. By following appropriate infection control measures, dentists can avoid transmitting or contracting AIDS.

"Infection control protects the dentist and patient," said Dr. Barrett, who is director of continuing education at the University of Detroit School of Dentistry. "When patients see the family dentist wearing gloves, masks and glasses, they should be reassured, not threatened."

The survey also found:

- 78.2 per cent of general dentists surveyed wear gloves with "all" patients; 19.9 per cent said they use gloves with "some" patients.
- Nearly 87 per cent of the dentists surveyed wear glasses with "all" patients, 9.4 per cent use glasses with "some" patients.
- 52.8 per cent wear masks with "all" patients; 37 per cent use them with "some" patients.

"The Academy's role is to educate," Barrett said. "We are strongly encouraging all dentists to make infection control as routine as washing hands between patients."

Barrett said Academy members are becoming aware that AIDS is not a "big city" disease. "It is a problem that has touched every sector of the American population," he said.

Every state has reported at least one case of AIDS, according to the Centers for Disease Control in Atlanta, Georgia.

Location seems to play a role in the dentist's decision whether to wear gloves in treating patients, the survey found. More than 80 per cent of the dentists in cities with populations of 100,000 or more wear gloves, compared with approximately 70 per cent of dentists who practice in rural communities.

A similar geographic pattern was found with masks.

The survey found that 60.6 per cent of dentists in big cities wear masks with all patients compared with 43 per cent of dentists who wear masks in rural areas.

The Academy survey also reported on infection control procedures used by dental hygienists employed by members. The survey found 99 per cent use gloves with some or all patients, 93 per cent wear protective eyewear and 65 per cent wear masks. △

ADA/FDI joint World Dental Congress '88 in Washington, D.C.

CHICAGO — The premiere dental meeting of 1988, a joint convocation of the American Dental Association (ADA) and the Fédération Dentaire Internationale (FDI), to be held October 8-14, promises to be a historic meeting.

The two organizations will hold separate annual business sessions but the scientific, technical and social gatherings will be merged.

According to Dr. David L. Grodberg, 1988 meeting chairman for the Council on ADA Sessions and International Relations, "This World Congress will allow dental colleagues an opportunity to meet and learn together in order to raise the standard of dental care throughout the world."

Attendees at this Washington, D.C., gathering of dentists from throughout the world, their guests and members of the dental team can attend scientific, educational offerings that feature the best of international dentistry.

The scientific program, presented jointly by the ADA and FDI, will include lectures on a variety of subjects related to the art and science of dentistry. Topics to be covered include: new esthetic concepts in prosthodontics, treatment of edentulous patients, bonding, hepatitis and AIDS, oral surgery, radiography, clinical pharmacology for the dentist, computer-assisted restoration design, TM disorders, and implants.

In addition to the lectures and registered clinics, the scientific session will include special paper presentations, table clinics and poster demonstrations.

The technical exhibits will feature state of the art equipment and supplies.

Attendees can visit sites and institutions around the Washington, D.C., area that have particular relevance to dentistry, including the National Bureau of Standards/Paffenbarger Research Center, Bethesda Naval Hospital Dental School and Clinic, Children's Hospital National Medical Center Pediatric Dentistry, Veterans Administration Medical Center Dental Services, the Armed Forces Institute of Pathology, Howard University School of Dentistry, and the National Institutes of Health (NIH)/National Institute of Dental Research (NIDR).

A charity gala performance to support the ADA's future research and educational efforts on AIDS, featuring Mstislav Rostropovich conducting the National Symphony, will be held at the Kennedy Center for the Performing Arts. △

Patient Communication: The Bottom Line

It can really pay off for your patients and your practice

Times have changed. A few years ago, the private practitioner's biggest challenge was to keep up with the demand for services. Today, building and maintaining a viable dental practice presents a different set of challenges. Recent graduates and established practitioners alike are asking themselves:

How can I be sure my patients are aware of and appreciate the essential services this practice has to provide?

How can I get them to keep coming in for the preventive and restorative care they need?

How can I generate the number of new patients necessary to keep this practice financially viable?

How can I reduce the "downtime" resulting from cancellations and no shows?

Vital questions. Many dentists across the country are finding it difficult to come up with reasonable answers.

What you may not realize is that you and your dental team are actually in a perfect position to gain greater control over present and future conditions. The key is a more effective patient communication program.

Through such a program, you and your dental team can influence how your patients think about their dental health and how they utilize the invaluable services you have to provide. Recognizing this simple fact is the first step toward better dental health for your patients and a healthier, more satisfying dental practice.

Is It Necessary? Is It Ethical?

Patient communication is not exactly a revolutionary idea. Traditionally, however, it has not been a central element of many practices. You may find it difficult to appreciate, at this point, what it means to make patient communication a centerpiece of your practice — and to see how doing so can pay off.

Further, ethical questions foster a certain reluctance to undertake what many would consider a form of bald "promotion" or "marketing". It's important to deal with these issues. How you see them will have a major impact on how much you can benefit from CDA's Patient Communication Planner.

First, let's look quickly at why patient

communication has recently become so important. The key indicator here is "the busyness factor". Dentists feel they aren't as busy as they used to be. As they should be. As they need to be. Why not? In recent years the supply of dental services has been growing at a greater rate than the demand for those services.

Several factors have affected demand. Dental caries among children is no longer the problem it once was — nor the source of so much activity in a dental practice. Dentistry, as a leader in both treatment and prevention of caries, has a lot to be proud of here. Ironically, it is the very success of the fight against tooth decay that has contributed to current situation.

What now? Anywhere dentists gather, you are likely to hear the supply side of the discussion. It is a complex issue, one with no "quick fix" solution. If there is an over-supply of dental services, the situation will get no better within the next decade or so.

Considerations of demand are complex as well, though largely because of the ethical and moral issues. Is it ethical for the profession to be working to increase demand? Some dentists have a great deal of difficulty with the whole idea: it seems unpleasantly self-interested. Then, too, there's a risk of "Americanizing" dentistry in Canada — of turning the profession toward the hucksterism common in the United States, where dentists advertise and employ a wide range of promotional gimmicks that are unbecoming to the profession and reflect negatively on all practitioners.

It is widely accepted among Canadian dentists that efforts to increase demand for professional services, if they are to be undertaken, are best left to organized dentistry: the Canadian Dental Association, whose Dental Awareness Program is working to promote dental health and dental services in general; and to the Provincial Associations who do their part on the provincial and local levels.

It is also important to note that professional ethics are not simply a matter of personal definition. As part of your license to practice, you must subscribe to a set of strict and enforceable guidelines which severely limit what you are allowed to do to advertise and promote your practice.

Regardless, many dentists feel it is inappropriate for dentists to be thinking

about themselves in commercial terms. For them, dentistry is a calling like other health professions. Serving the needs of their patients is paramount; personal economic gain is secondary.

And yet, if patients aren't coming in for treatment, it is difficult for the profession to fulfil its role; it is also difficult to keep the office operating on a reasonable economic basis. Without increasing demand for dental services, the very services themselves may be in jeopardy.

The Bottom Line: Meeting Real Needs

There is a light at the end of the tunnel. It was illuminated by Dr. Dennis Wells, Past President of the Ontario Dental Association, speaking at CDA's National Manpower Conference in Toronto in November, 1985. Dr. Wells said, "The priority in dentistry today must be to translate need into demand."

This simple statement has tremendous meaning and importance for each and every dentist in Canada. It focuses the profession on an objective which is professionally responsible and ethical. It says, in essence, that the "busyness factor" is itself a symptom of a bigger, and a more important problem: a lack of dental health among people in Canada. And it directs the profession to doing what it was trained to do — meet the real needs of patients.

Are there dental health needs among Canadians that are not being met? Unquestionably. Especially among adults, over 90 per cent of whom will suffer from some form of periodontal disease in their lives. Dentists know that; unfortunately, the public doesn't.

CDA's Gallup Poll in 1985 tells us in no uncertain terms that adult Canadians have the wrong idea about their dental health, and about the real benefits of maintaining a regimen of regular dental visits:

- 61 per cent think tooth decay is the leading adult dental problem
- Only 22 per cent expect ever to get periodontal disease
- Only 30 per cent identify professional care as an element of prevention

(For a more complete picture, see the Dental Awareness Program Report: *Dental Health: What Canadians Think*)

People seem to believe that dental problems are both something they grow out

of (i.e., tooth decay is kids' stuff) and an inevitable consequence of the aging process (i.e., tooth loss in later life). In between, they see themselves as on a dental health holiday (i.e., no tooth decay = dental health).

It may surprise you to learn that what is true of the population as a whole is, by and large, true of regular dental patients as well. Patients are largely unaware of the threats to their dental health, and misguided about how you can help. And that, as much as anything, is the reason why people tend to go to the dentist less often as they grow older. They just don't know why they should.

These misperceptions have a profound effect on how and when people utilize your services. It is a matter of the utmost urgency that these ideas be corrected. If you hope to meet the real needs of your patients, the place to start is in helping them understand what those real needs are. Doing so may be the most important service your practice can provide. The more effective you are, the more satisfying and rewarding your practice is likely to be.

Getting It Right

How can you ensure your patient communication programming is on the right track? You can start by recognizing that communication is central to virtually every aspect of your relationship with your patients: from how the phone is answered, to how patients are greeted when they arrive, the information available in the waiting room, the hygiene instruction they receive — even the treatment you deliver.

Once you've identified the range, nature and sequence of communications transactions, review each one, asking yourself two questions: What do we do now? Could we make small changes to improve things? In large part, developing more effective communication programming is that simple and that specific. The little things really do count.

Finally, try to develop an overall programming plan, one that knits all the little things together into a clear, comprehensive approach to communication that can be readily integrated into your office routine. An effective program will have the following:

The Right Perspective

Again, patients don't necessarily see their dental health depends on your dental team as they should. Too many are operating under a set of misperceptions and

misconceptions that are having a significant effect on their dental health and their utilization of dental services.

If your communications program is going to work, it has to be built on a solid understanding of your patients' attitudes, knowledge and motivation. To gain the necessary perspective, you'll want to do some research of your own: Do your patients know what they should about periodontal disease? Do they know the purpose of a check up? Do they need more reminders of their next visit? Would they like more information from you?

World-class microbiology laboratory to be built in Winnipeg

The new microbiology laboratory to be built in Winnipeg will be world class, according to Health and Welfare Minister Jake Epp, and the decision to locate it in Winnipeg is one of several projects which will help develop new and strengthen existing technology industries in Manitoba.

The laboratory will be one of only three such public health facilities in North America.

When completed, the laboratory will provide a state-of-the-art environment for new projects requiring high containment to ensure adequate protection for the scientists and the surrounding community. The laboratory will facilitate work in identifying viruses and bacteria which cause human disease and in developing methods for their identification.

Mr. Epp said, "I am involved in discussions with the Province of Manitoba and with the federal minister responsible for Western diversification, Mr. William McKnight, on a number of health related initiatives. We are looking forward to the creation of a clinical biochemistry centre to develop and market those specialized products required to establish standards for clinical chemistry laboratories across Canada."

"Together with the new microbiology laboratory, these initiatives will offer benefits to all Canadians in improving health and health care, and will present additional opportunities for the development of health technology industries in Manitoba and all of Western Canada," Mr. Epp concluded. △

The Right Ideas

The key ideas underlying the practice of dentistry are old hat to you and your dental team. But they are far from clear to Canadians. The communications challenge is to get across the right ideas to your patients: that dental health is a readily achievable goal; that prevention is a life-long process; and that the dental team has a vital and regular role to play in preserving and protecting dental health.

Every single communications transaction with your patients should work to convey and reinforce one or more of these central ideas. The best communicators recognize that you can't deliver these messages too often. Research tells us that the public is looking to you and your dental team to help them get their thinking on the right track.

The Right Place

Communication is not strictly interpersonal. In fact, the office environment itself is one of your prime communications mediums. The sign on the door, the layout of the waiting room, the pictures or posters on the wall, the print material available for patients to peruse, all play a part. Make sure your office is a communicating environment. And that the messages it communicates are consistent with your patients' needs and your practice priorities.

The Right Stuff

Posters, pamphlets, fact sheets and booklets can carry a major part of the communications load if used properly. Make sure you've got the right patient education resources in good supply and that they are properly integrated into your practice. Choose your materials carefully. And make a review of inventory, subject matter and staff utilization a periodic activity.

The Right Time

Patient communication takes time from every member of your dental team: time to talk; time to listen; and time to teach. And yet time is the scarcest commodity of all, given the pressures of a busy schedule. For maximum efficiency and effectiveness, assign different interpersonal communication roles to each member of your team, roles that fit best with their professional task and responsibilities. Reinforce verbal communication with handout materials patients can take away for later reference: explanations of treatment, of self care techniques and, of the time and date of the next appointment.

The Right Objectives

As you can see, improving patient communication will take some time and effort. It only makes sense that your investment should get results that you can measure.

The objectives you set will depend on your practice goals. They won't be achieved overnight. Good office communications programs don't work that way. But they do work, over time, to:

- Increase your patients' awareness and knowledge of dental health;
- Increase your patients' appreciation of the essential services you and your

dental team provide;

- Motivate more regular and more timely utilization of those services

In the final analysis, better patient communication is not the answer to every challenge or problem that confronts you as a private practitioner today. It does offer, however, one of the best and most effective means available to you to help build and maintain a healthy practice. △

This article has been adapted from the Introduction to CDA's *Patient Communication Planner*. The Planner provides you and your dental team with a step-by-step guide to developing and implementing a more effective patient communication program in your practice.

Dr. Robert Patrick is first Canadian President of international academy



Dr. W. Robert Patrick

W. Robert Patrick, DDS, who practises in Trenton, Ontario, recently became the first Canadian President of the Academy of Dentistry International. He was installed for a two-year term (1987-89) at the Academy's annual meeting in Las Vegas, Nevada.

This is the second such international claim to fame achieved by Dr. Patrick.

In 1983, he was named the first Canadian dentist to become President of the Academy of General Dentistry.

He has also gained distinction in other fields.

Dr. Patrick is a former Mayor of Trenton and has served as a governor of that community's hospital board, as past chairman of both his county and city planning boards and as chairman of Trenton's finance and public works committees. Dr. Patrick has also been a member of the county's executive committee.

Active in community service work,

Dr. Patrick is a past president of Trenton's Rotary Club and is a former director of the Chamber of Commerce.

Dr. Patrick is a graduate of the Faculty of Dentistry, University of Toronto. He is a Fellow of the Academy of General Dentistry, the International College of Dentists and the Academy of Dentistry International.

Rapid growth

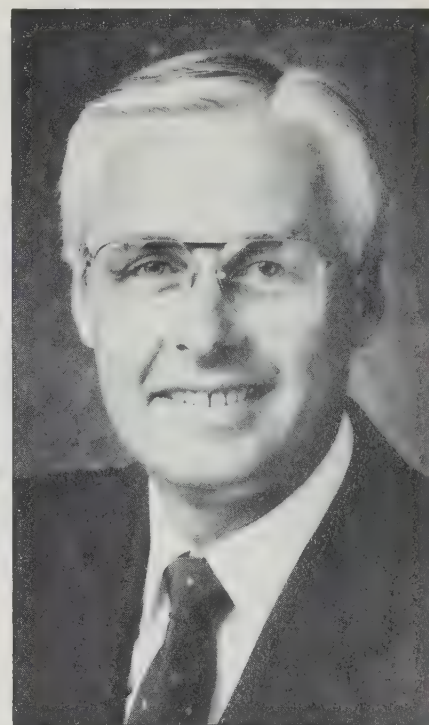
Following his induction in Las Vegas at the Academy's annual meeting, Dr. Patrick travelled to Buenos Aires, where he chartered the new South American chapter of the rapidly growing honorary fraternity which includes many Canadian Fellows. In Argentina, 39 new Fellows from Peru, Brazil, Paraguay, Uruguay and Argentina, were installed. On January 1, Dr. Patrick, with his Convocation team, was in New Delhi, India, to charter a new Chapter in that country.

Fellowships are held by many of the Canadian Dental Association's past presidents including Drs. Robert Hicks, Bradley Holmes, Michael J. Crompton, John R. Robertson and JCDA's Editor, Dr. Ralph Crawford.

Dr. Donald E. Williams, also a past CDA president, is the Canadian Treasurer of the Academy.

The Sixth Annual Canadian Academy of Dentistry International Meeting will be held in conjunction with the Canadian Dental Association's Annual Convention, in Edmonton, Alberta, in August of this year. Dr. Michael Balanko of Vancouver is the arrangements chairman for this event. △

Federal health minister approves \$5000 in support of geriatric symposium



The Hon. Jake Epp

Dr. Ralph Crawford, coordinator of the Symposium — "Clinical Management of the Elderly Patient" — to be held in Winnipeg April 21 and 22, next, has announced with pleasure the receipt of a cheque in the amount of \$5,000 accompanied by the following letter, from the Hon. Jake Epp, Minister of National Health and Welfare:

"I am pleased to inform you that I have just approved an amount of \$5,000 under the terms of the National Health Research and Development Program in support of the "Symposium on the Clinical Management of the Elderly Dental Patient. I hope that this contribution from the Canadian taxpayers will help ensure the success of this Symposium."

The two-day Symposium features a dozen renowned leaders in Geriatric Dental Care from the United States and Canada, and is being held in conjunction with the Board meeting of the American Academy for Geriatric Dentistry. △

Obituaries/ Nécrologies

Laskowski, John E.: Born in 1930, Dr. Laskowski conducted a practice in Hamilton, Ont. He was a graduate of McGill University, Montreal, in 1958.

Millar, I.A.L.: who was born in 1913, graduated from Dalhousie University, Halifax, in 1935. He conducted a dental practice in Montague, Prince Edward Island.

Mintz, A.B.: practised in Regina, Saskatchewan. Born in 1913, Dr. Mintz was graduated in dentistry from the University of Western Ontario, London, in 1937. He was a Life Member of the CDA.

Power, John G.: Dr. Power, who practised in West Vancouver, British Columbia, graduated from the University of Toronto in 1954.

Rice, Ronald W.: A graduate in dentistry from the University of Manitoba in 1970, Dr. Rice practised in Fort McMurray, Alberta, at the time of his decease.

Saunders, Dwight F.: Born in Kingston, Ont., in 1946, Dr. Saunders graduated in dentistry from the University of Western Ontario in 1972. He conducted a practice in Ottawa.

Sproul, J.E.: Dr. Sproul, who conducted a dental practice in Newcastle, New Brunswick, graduated in dentistry in 1942. He was a Life Member of the CDA.

Did you know?

At the American Dental Association Convention in Las Vegas last October, 1,195 dentists (including the Editor of the CDA Journal) voluntarily submitted to anonymous testing for the AIDS virus.

Not one of the dentists tested positive.

Dr. Edward R. Bilkey gifted pedodontist, passes at 64

Dr. Edward R. Bilkey, termed "an outstanding member of our profession" by colleague Dr. Wesley Dunn, former Dean of Dentistry at the University of Western Ontario, who graduated from the University of Toronto with Dr. Bilkey in 1947, died recently in Toronto at 64.

Two of Dr. Bilkey's special talents were identified early in his career. He was particularly gifted in the field of pediatric dentistry and was the winner, at graduation, of the Academy of Dentistry prize in that field.

Also, as an undergraduate at the University of Toronto, Dr. Bilkey, demonstrated a flair for journalism, and served as editor of the annual student publication.

The Faculty of Dentistry appointed him as a demonstrator in that department almost immediately after graduation. He later became an Associate and remained on the Faculty staff for about seven years.

He also served as President of the Canadian Society of Dentistry for Children.

Dr. Bilkey was a familiar figure in Canadian Dental Association activities, serving as a member of CDA's Public Relations Committee and later, as an associate editor of this Journal.

In 1959, he was appointed Editor of the Journal of the Canadian Dental Association. He served for about one year in that capacity.

He also held offices in the Ontario Dental Association and the Toronto Dental Academy. More recently, he was a member of the executive of the North Toronto Dental Association.

Dr. Bilkey was an avid ham radio enthusiast and enjoyed cross country skiing on his farm property.

He is survived by a son, David James; daughters Joy Jukes and Jennifer Schultz, and four grandchildren. △

CDA Retirement Savings Plan

Unit values: (Funds are valued weekly)

Fund	Unit values as at	
	January 29, 1988	December 31, 1987
Fixed Income Fund	60.64067	58.12546
Common Stock Fund	12.45254	12.72665*
Money Market Fund	39.53857	39.29074
Balanced Fund	24.06712	23.78698

Interest rates:

Guaranteed Fund

Term

	*Interest rates as at	
	January 29, 1988	December 31, 1987
1 yr	9.50%	9.25%
2 yr	10.00%	9.60%
3 yr	10.50%	10.10%
4 yr	10.75%	10.35%
5 yr	11.00%	10.60%

(*rates subject to change without notice.)

Total Assets (Market value) of the Plan as of:

	January 29, 1988	December 31, 1987
	\$83,634,360	\$83,606,353

For further information:

Write:



CDA RSP

Write:

CDSPI

Retirement Services Dept.
Suite 600
2 Lansing Square
Willowdale, Ontario
M2J 4Z3

or phone, toll-free:

Western and Atlantic Canada
and Ontario Area Code 807
only 1-800-268-5418
Quebec and Ontario, (except Area
Code 807) 1-800-268-3411
Metro Toronto Area 497-7117

* Effective November 6, 1987 the units of the Common Stock Fund were split on the basis of 10 new units for each 1 unit held.

Canadian Dental Association Convention in conjunction with the Alberta Dental Association August 21-24, 1988

Brochures were recently sent to all Canadian dentists with the compliments of Travel Alberta to encourage you, your family and the entire dental team to come to scenic Alberta during the CDA Convention this summer. Travel Alberta has a wealth of information on how to enhance your stay in this lovely province. Whether you plan to attend the convention only, or enjoy a subsequent holiday in the Rockies, feel free to contact them at any time for further information.

What will the CDA Convention offer to you, your family and staff? You will:

- ☐ attend an excellent and yet "inexpensive" three day continuing education meeting which is open to the entire dental team.

Keynote speakers include:

Dr. Frank Speers (Esthetics)
Jennifer de St. George (Front Office Personnel)
Dr. Bernie Dolansky (Endodontics)
Jim and Naomi Rhode (Practice Management)
Dr. Ed Sauer (Capitation)
Dr. Bryce Larke (AIDS and Dentistry)

- ☐ hear two top-notch pre-convention speakers:

Dr. James Cottone on 'Infection Control for Today's Health Hazards in Dentistry' — a step by step analysis on how to prevent transmission of infectious diseases to you, your staff and your patients
Dr. William Becker on 'Changing Concepts in Periodontal Therapy'

- ☐ participate in an exciting social program featuring the World Famous Shumka Ukrainian Dancers at our Sunday evening registration party, and Las Vegas entertainer Bobby Curtola at our Tuesday Fun Night. Monday night will be free to meet friends, attend reunions and dine at some of Edmonton's finest restaurants

- ☐ view over 130 exhibits in one of Canada's most unique, best lit and well laid out convention centres. All members of the dental team will have an opportunity to learn what's new from some of the world's best suppliers

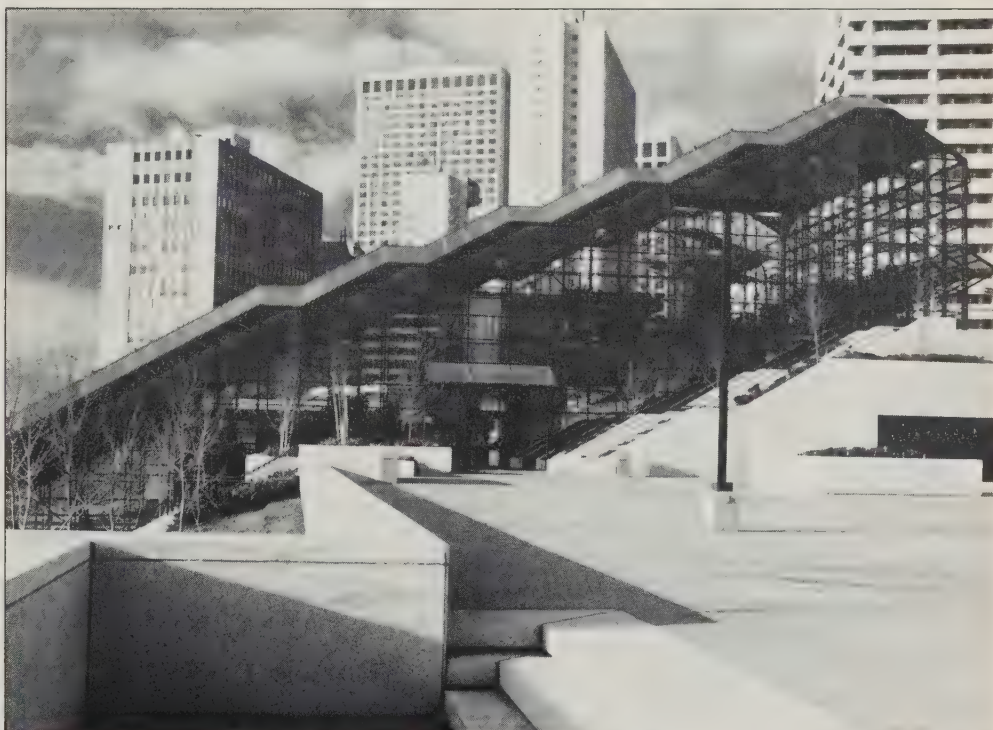
- ☐ be able to bring your whole family to

scenic Alberta for a fabulous vacation in the Rockies prior to the start of school, and along the way experience the "ultimate" in shopping at the world famous West Edmonton Mall.

These are only a few of the wonderful things that you will see and do when you come to Edmonton this August. So, plan to attend the CDA Convention, August 21-24, 1988. Δ



A view of the Rockies near Lake Louise, in Banff National Park, west of Edmonton.



Side view of the upper level of the Edmonton Convention Centre, in downtown Edmonton.

PHOTOS COURTESY OF THE FEDERAL DEPARTMENT OF REGIONAL INDUSTRIAL EXPANSION

1988 CANADIAN DENTAL ASSOCIATION CONVENTION

(hosted by the Alberta Dental Association)

AUGUST 21 to 24, 1988

EDMONTON CONVENTION CENTRE

Edmonton, Alberta

ADVANCE REGISTRATION FORM

**** Dentists registering by June 15, 1988 will be eligible to win a draw of 2 tickets anywhere Air Canada flies in Europe and North America (winner **must** be present at registration round-up Sunday night) Registration after June 15th, or at convention add \$25.00.**

PLEASE PRINT: (one form per delegate, duplicate form if necessary)

NAME: _____
Surname First Name

ADDRESS: _____
Street/Box No. City Province
Postal Code Telephone (office) (residence)

PLEASE CHECK APPROPRIATE GROUP:

☐ Dentist ☐ Office Personnel/Staff ☐ Technician ☐ Spouse ☐ Non-dental/guest ☐ Student

PRE-CONVENTION COURSES — LIMITED ATTENDANCE (Full day courses)

Dr. James Cottone — Infection Control for Today's Health Hazards in Dentistry — Saturday, August 20

Dentists \$125.00
Office staff/other 50.00

Dr. William Becker — Changing Concepts of Periodontal Therapy — Sunday, August 21

Dentists 125.00
Office staff/other 50.00

CONVENTION REGISTRATION:

Dentists — members Alberta Dental Assoc. (due to annual levy) Nil
— members CDA/ADA (American)/foreign 150.00
— non-members CDA 225.00

INCLUDES: Exhibits, Scientific sessions, Monday luncheon

Technicians 50.00
Office Personnel (includes all dental staff) 50.00
Guest/non-dental personnel 50.00
Students Nil

ALL OF ABOVE INCLUDES: Exhibits and scientific sessions

Spouses 50.00

INCLUDES: Exhibits and scientific sessions (check if will attend)
Other activities: Mon. Luncheon West Edmonton Mall ☐
Tues. Family Fun Brunch ☐
Tues. High Tea and tour Muttart Conservatory ☐

Children's Program: 15.00 x

Names and ages: _____

INCLUDES: Registration Round-up plus: (check if will attend)
Monday — Tour day and lunch (zoo, Space Science Centre, Fort Edmonton Park) ☐
Tuesday — Family fun brunch ☐

SOCIAL EVENTS: (Convention Centre)

Sunday Evening — Registration Roundup 15.00
(with world famous SHUMKA DANCERS — early bird draw 8:30 p.m.)

Tuesday Evening — WESTERN NIGHT — Limited attendance (per person) 38.00

Monday Noon — CDA/ADA INAUGURAL LUNCHEON — Dentists only — If will attend check ☐ Nil

(After June 15th add \$25.00)

TOTAL

IMPORTANT: Make cheques payable to "Canadian Dental Association Convention".

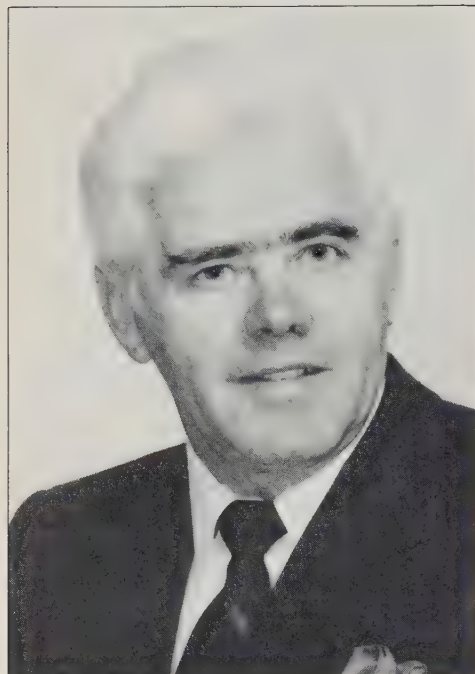
Mail to: **Canadian Dental Association**

1988 CANADIAN DENTAL ASSOCIATION CONVENTION 1815 Alta Vista Drive Ottawa, Ontario K1G 2Y6

CANCELLATION POLICY: Cancellations received before August 1st, full refund. Cancellations after August 1st subject to a 25% administrative charge.
No refunds after August 15, 1988.

HOTEL RESERVATION FORM

153



Dr. Wayne B. Barro

Dr. Wayne B. Barro of Dartmouth, Nova Scotia, was recently elected President of the Canadian Association of Orthodontists at the annual meeting of the Association, held in Toronto.

Dr. Barro maintains a private practice in Dartmouth, Nova Scotia. He is an associate professor at Dalhousie University, Halifax, and is also Head of the Division of Orthodontics and Chairman of the Department of Pediatric and Community Dentistry.

He is a past president of the Atlantic Society of Orthodontists and a member of the Canadian Dental Association, American Association of Orthodontists and the Northeastern Society of Orthodontists.

At the same meeting, Dr. Richard L. Pass, of Burlington, Ontario, was named President-elect of the Canadian Association of Orthodontists.

Other directors of the executive are: Dr. Oleg S. Kopytov, of Montréal; Dr. Yale G. Malkin, Vancouver, and Dr. Malcolm Yasny, of Toronto. Dr. Brian Hurd, of Burlington, Ont., was named Secretary-Treasurer. Δ

Donald Woodside, Professor and Head of the Orthodontic Department, Faculty of Dentistry, University of Toronto, together with his co-researchers, Dr. Sten Linder-Aronson and Dr. Anders Lundstrom, has been

awarded the First World S.I.D.O. Prize (Societa Italiana di Ortodonzia), for the article "Mandibular Growth Direction Following Adenoidectomy", which was published in the April 1986 edition of the American Journal of Orthodontics.

Dr. Woodside has also been selected for the Mershon Award for this year. This will be presented at the annual meeting of the American Association of Orthodontists, which will be held in New Orleans in May, 1988. Δ

A professor in the Faculty of Education at Queen's University in Kingston, Ontario, has embarked on a study in which dentists could be of assistance, and when this study has been successfully completed, they themselves may benefit.

Dr. Ruth Rees is attempting to locate all books on the topic of dentistry or dental education for children (to include such topics as teeth, dentists, career preparation, visiting the dental office, etc.).

Dr. Rees would like to know the titles, authors and publishers' names of any books of this nature in dental offices or clinics.

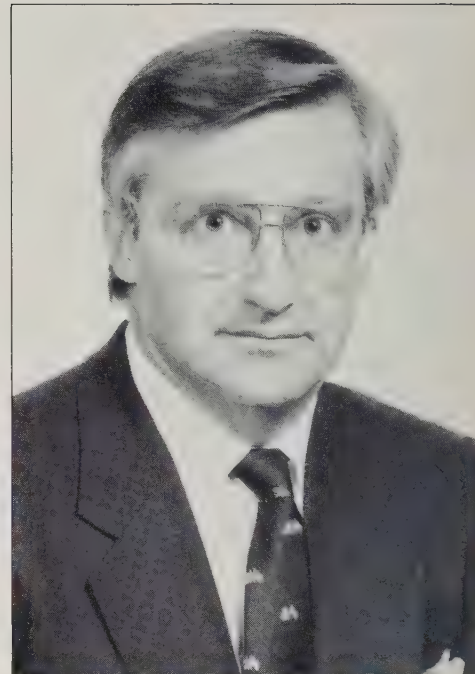
She had, at the time of writing, identified about 25 books in these categories, but found many of them not worth recommending for use. Her intent, when the project has been completed, is to publish her findings in an appropriate dental journal so that practitioners can benefit. If nothing more, Dr. Rees stated, paedodontists and general practitioners will be able to select some appropriate children's books for their waiting rooms.

Please send any information you may have of this nature to: Dr. Ruth Rees, Faculty of Education, Queen's University, Kingston, Ontario. K7L 3N6. Δ

Dr. Raymond G. Bozek of Burlington, Ontario, was elected President of the Great Lakes Society of Orthodontists at that organization's recent annual meeting in Pittsburgh, Pennsylvania.

The 1,000-member Great Lakes Society includes orthodontists from Ontario and four states of the United States — Ohio, Michigan, Indiana and Pennsylvania.

Dr. Bozek received his DDS from the University of Toronto in 1963 and his credentials in Orthodontics in 1968. He has also been associated with the Univer-



Dr. Raymond G. Bozek

sity of Toronto's Faculty of Dentistry Postgraduate Orthodontic Department since 1972.

In addition to his activities with the Great Lakes Society, Dr. Bozek is a member of the Canadian and American Associations of Orthodontists, the Canadian and the Ontario Dental Associations, the Burlington Dental Academy, the Toronto Orthodontic Club and the Ontario Society of Orthodontists. He is a past president of the latter two groups. Δ

Tom Lykos, a student in the Faculty of Dentistry, University of Toronto, passed away on December 28 last, after a lengthy struggle with cancer. Tom graduated from the University of Toronto with a BSc degree in 1985 and was then accepted into the DDS program. Classmates have described him as "a likeable, conscientious student who accomplished all he undertook."

Classmates in the Class of '89 have initiated an entrance scholarship to the Faculty in his name. Anyone wishing to contribute to the Tom Lykos Memorial Scholarship may do so by forwarding a cheque to — University of Toronto, Tom Lykos Fund — in care of the Faculty of Dentistry, 124 Edward St., Toronto, Ont., M5G 1G6, attention: Ms. A. Pereira (416) 979-4373. An official receipt will be issued. Δ

WHAT'S NEW IN '88?

The latter half of 1987 saw the development of a number of major new Canadian Dental Association programs that are now primed and ready to work for dentistry.

What's new? Here's what:

- *First Teeth* — the first integrated program from the Canadian Dental Association aimed at parents of children up to age 9
- *What a difference a little care makes* — a complete dental awareness programmer's kit for seniors
- *Bob, Keep Smiling and the 5 Point Prevention Plan* — the messages on all of your Dental Health Month materials
- and the CDA catalogue entitled *Don't Leave your Patients in the Dark* — the 8 page catalogue, featured in the February Journal, that now makes it possible to see and order all of your favourite CDA patient education materials at one time.

Here is a quick review of two of these programs:

First Teeth

First Teeth, the three year \$1.5 million program made possible by the generous support of Colgate-Palmolive, is off to an exceptional start. Orders topped 7,000 in December alone, its first month of availability. The requests poured in from dental offices, provincial dental associations, schools and the public at large from across Canada making *First Teeth* the single most demanded CDA program.

The main elements of the program are: the 24 page booklet, providing parents the essential information that they need to know about first teeth; the growth chart, an entertaining and involving item for the children; and the office planning kit, introducing you and your dental team members to the program and providing suggestions on using it in your practice. Advertisements have also been placed in the January and February editions of *Chatelaine* magazine to create demand for the program at the consumer level.

Developed in consultation with some of Canada's leading specialists in paediatric dentistry, the program will help you emphasize the importance and care of first teeth. Its ultimate goal is to help parents foster good, lifelong dental habits in their children.

First Teeth is an important program. It presents another great opportunity to show our commitment to prevention and to patient education, and to get our patient's dental health off to the best possible start.

What a Difference a Little Care Makes

In 1985, the CDA, in conjunction with the City of Toronto's Public Health Department, created this award-winning dental awareness program for seniors.

Now, thanks to the generous support of the Canadian Fund for Dental Education, the CDA has put the *What a Difference a Little Care Makes* campaign into a compact guide that will allow the campaign to be adapted for communities across Canada.

The *What a difference a little care makes* Programmer's Guide includes posters, fact sheets and articles from the Toronto campaign as well as practical instructions for launching the campaign with local energy. The *Guide* was developed as an adaptable resource for local

development. It's elements can be used in any combination, from a focussed effort to distribute fact sheets to a full-fledged community communications campaign.

Requests for the *Guide* have already come in from all over the country.

In Toronto, *What a difference a little care makes* was a concrete success. It put many seniors in touch with a dentist for the first time in years and gave hundreds of others the dental care information they needed.

Run out of CDA patient information materials?

If you've run out of materials for these programs, or any others which the CDA offers, send a letter to:

Canadian Dental Association
Order Section
1815 Alta Vista Drive
Ottawa, Ontario
K1G 3Y6.

Telephone orders accepted with Visa or Mastercard only at (613) 523-1770.

Let's work together to keep our patients' teeth good for life. Δ

In need of last minute Dental Health Month ideas?

With dental health month only a few weeks away, your plans should be well underway for this year's events.

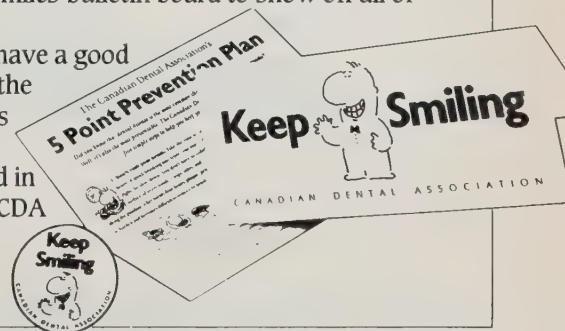
If you do need a couple of last minute suggestions on getting this year's *Keep Smiling* message and the *5 Point Prevention Plan* across, just take a look at the Dental Health Month Planning kit or the 1988 Planning Kit supplement made available to your community organizers and provincial dental associations. It contains plenty of suggestions for activities (office, community and more).

Just remember, the key is to get the *Keep Smiling* message across whenever you can. A simple, but effective, place to start is your staff's use of the telephone and telephone answering machine. Why not answer by saying *April is Dental Health Month, Keep Smiling*.

How about keeping an instant camera in the office? Take pictures of your patients and pin them up on your office's *Miles of Smiles* bulletin board to show off all of your patients' great smiles.

Ultimately, whatever you choose to do, have a good time with this year's theme materials, get the whole dental team involved in the activities and *Keep Smiling!*

Last minute orders can always be phoned in (with a Visa or Mastercard number) to the CDA Order Section at (613) 523-1770. Δ



Dental Products and Materials

Les produits et les matériaux dentaires

1. Altuna, G. and Freeman, E. *The reaction of skin to primers used in the "single-step" bonding systems*. American Journal of Orthodontics and Dentofacial Orthopedics, v. 91, no. 2, pp. 105-10.
2. Bagnall, R.D. *The science of dental materials*. British Dental Journal, v. 162, no. 7, Apr 11, 1987, pp. 252.
3. Brune, D. *Metal release from dental biomaterials*. Biomaterials, v. 7, no. 3, May 1986, pp. 163-75.
4. Bunch, J. and others. *Evaluation of hard direct reline resins*. Journal of Prosthetic Dentistry, v. 57, no. 4, Apr 1987, pp. 512-9.
5. Cohen, M.E. and Ralls, S.A. *Evaluation using sequential trials methods*. Journal of Dental Education, v. 50, no. 9, Sept 1986, pp. 532-7.
6. Daniel, S.J. and Scruggs, R.R. *The reliability of three methods for evaluating dental sealants*. Journal of Dental Education, v. 51, no. 4, Apr 1987, pp. 182-5.
7. Dolby, A.E. *Cellular and soluble mediator components of the local immune response to dental plaque*. Journal of Clinical Periodontology, v. 13, no. 10, Nov 1986, pp. 928-31.
8. Elderton, R.J. *Dentistry in the year 2000. Restorative dentistry*. Dental Update, v. 13, no. 4, May 1986, pp. 161-4, 168.
9. *Guidelines for the acceptance of chemotherapeutic products for the control of supragingival dental plaque and*

gingivitis. Council on Dental Therapeutics, Journal of the American Dental Association, v. 112, no. 4, Apr 1986, pp. 529-32.

10. Ismail, A.I. and others. *Findings from the Dental Care Supplement of the National Health Interview Survey, 1983*. Journal of the American Dental Association, v. 114, no. 5, May 1987, p. 617-21.
11. McInnes-Ledoux, P.M. and others. *The effectiveness of opaquer and color-modifier materials: a laboratory study*. Journal of the American Dental Association, v. 114, no. 2, Feb 1987, p. 205-9.
12. Midda, M. and Coosky, M.W. *Clinical uses of an enzyme-containing dentifrice*. Journal of Clinical Periodontology, v. 13, no. 10, Nov 1986, p. 950-6.
13. O'Rielly, M.M. and Featherstone, J.D. *Demineralization and remineralization around orthodontic appliances: an in vivo study*. American Journal of Orthodontics and Dentofacial Orthopedics, v. 92, no. 1, Jul 1987, pp. 33-40.
14. Polakoff, S. *Acute hepatitis B in patients in Britain related to previous operations and dental treatment*. British Medical Journal (Clinical Research), v. 293, no. 6538, Jul 5, 1986, pp. 33-6.
15. Ravnholt, G. *Accelerated corrosion analysis of dental amalgams*. Scandinavian Journal of Dental Research, v. 94, no. 6, Dec 1986, p. 553-61.
16. Stanford, J.W. *Recommendations for determining biocompatibility and safety for the clinical use of materials in dentistry*. International Dental Journal, v. 36, no. 1, Mar 1986, pp. 45-8.
17. Van der Burgt, T.P. and others.

- Tooth discoloration by dental materials*. Oral Surgery, Oral Medicine, Oral Pathology, v. 60, no. 6, Dec 1985, pp. 666-9.
18. Whitford, G.M. *Fluoride in dental products: safety considerations*. Journal of Dental Research, v. 66, no. 5, May 1987, pp. 1056-60.
 19. Whitford, G.M. and others. *Topical fluorides: effects on physiologic and biochemical processes*. Journal of Dental Research, v. 66, no. 5, May 1987, pp. 1072-8.
 20. Wyatt, C.C. and others. *A comparison of physical characteristics of six hard denture reline materials*. Journal of Prosthetic Dentistry, v. 55, no. 3, Mar 1986, pp. 343-6.
 21. Yontchev, E. and others. *Contact allergy to dental materials in patients with orofacial complaints*. Journal of Oral Rehabilitation, v. 13, no. 2, Mar 1986, pp. 183-90.

New Library Acquisitions

- Nakajima, E. and West, V. *Introduction to Bioprogressive Therapy*. London: Quintessence, 1987, 166 p.
- Van der Linder, F. and Boersma, H. *Diagnosis and treatment planning in dentofacial orthopedics*. London: Quintessence, 1987, 336 p.

One copy of any one of the above articles is available at no charge from the library to all CDA members. Non-members will be charged \$5.00. This bibliography was generated with the help of MEDLARS, a computerized information retrieval system for the Health Sciences field, which has been operational in the library since February 1982.

Keep Smiling



CANADIAN DENTAL ASSOCIATION

La bibliothèque de l'ADC offre gratuitement à ses membres et pour \$5.00 aux non membres une copie des articles au-dessus. Cette bibliographie a été préparée avec l'aide de MEDLARS, un système informatisé de recherches bibliographiques pour les sciences de la santé. Ajouté à la bibliothèque en février 1982.

Dental Care for Seniors

I read with great interest in the "Richmond News" that your goal is to provide high quality dental health to patients across Canada.

I am wondering if this statement is correct, when there is no dental care for seniors in this province.

My husband and I are in desperate need of dental care.

I can't understand why after paying for years into a dental plan, my husband was callously told on his retirement at 65, that his plan was cancelled. Does the government of B.C. and the Canadian Dental Association assume that when one reaches 65 that we no longer have any teeth? and that we are all wealthy people.

I am willing to pay as much as I can each month for dental care but, I cannot possibly afford hundreds of dollars in one payment.

I trust you will understand how anxious and frustrated I feel and hope you can advise me as soon as possible on this matter. Δ

(Mrs) P. Humphreys
Richmond, B.C.

Wisdom tooth study

I would appreciate a documentation from your recall practice of children from 15 to 25 years old. The number of upper and lower wisdom teeth that erupted into the mouth as a percentage of those that did not erupt.

At the same time, I would be interested to know the number of adult patients, twenty-five years and older, who have, in fact, impacted wisdom teeth, whom you have followed for the last 10 years versus the number who have a pathological situation develop. Δ

M. Lazare, BSc., DDS
Pointe Claire, Québec
Pointe Claire Medical Centre
612 Boul. St-Jean, Suite 109. H9R 3K3

Minister commends CDA for its cooperation

Thank you for your letter of November 17, 1987, enclosing two issues of the Journal of the Canadian Dental Association.

I was delighted and encouraged to note the coverage given to AIDS by the Journal. The various discussions between officials in my Department and representatives of the Association are clearly leading in the direction of close and productive collaboration on education, research and a number of other issues around AIDS. I trust that this important cooperation will continue to grow.

I was very pleased to see, as well, that both the interview and the document

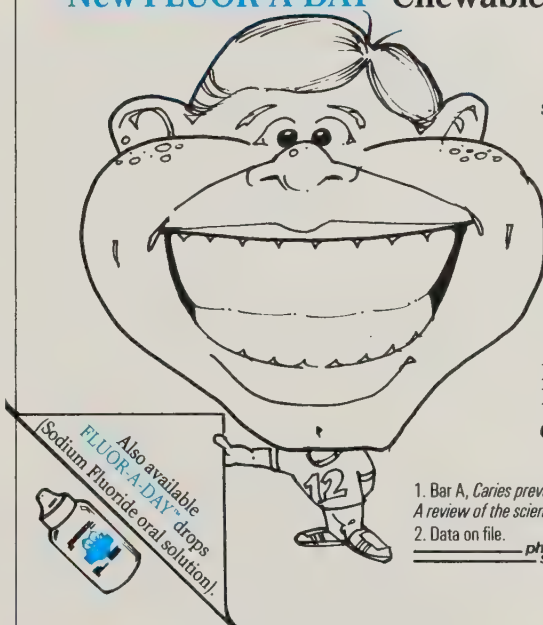
"Achieving Health for All: A Framework for Health Promotion" have been published in your October, 1987, issue.

You will be encouraged to know, as I am, that already it has prompted favourable comment in the form of letters from your members who have taken the time to write to me.

It is through cooperative efforts such as these that we can work together to enlighten the public towards improving their dental health, and I do appreciate your taking time from what I know is a busy schedule to pass along this information. Δ

Jake Epp
Minister of National
Health and Welfare

Great Taste With Non-Cariogenic Xylitol Brings Out Their Smile! New FLUOR-A-DAY™ Chewable Tablets Help Them Keep It.

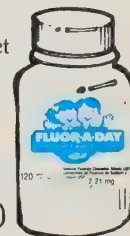


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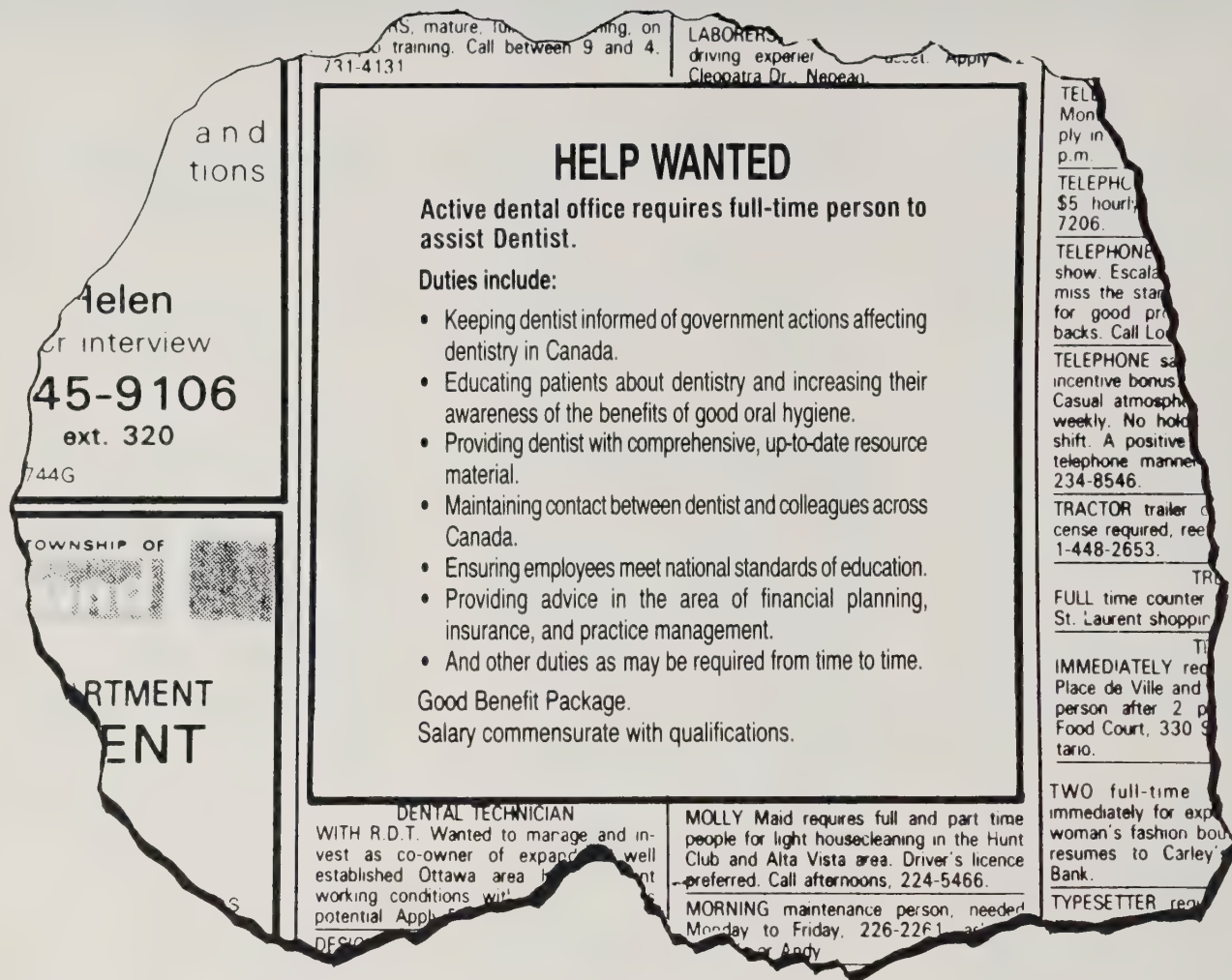
1. Bar A, Caries prevention with Xylitol, A review of the scientific evidence.
2. Data on file.

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now sweetened with Xylitol.

Compliance information on page 173.



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COLOR ATLAS OF CERAMO METAL TECHNOLOGY — VOLUME 1

Mashiahiro Kuwata

*Ishiyaku Euroamerica, Inc., St. Louis
1986, hardcover, 320 pages*

The author has produced a well illustrated color atlas employing a simple format of three large photographs with corresponding legends per page. Detailed explanations lead the reader step by step through each topic of discussion. The quality of the illustrations and photographs is excellent throughout.

The first of four chapters provides a good foundation for any technical procedure. Laboratory necessities such as bench heights, working positions, working posture and digital manipulation required for a variety of technical tasks are described.

The second chapter directs its attention to the anatomically correct restoration and maintenance of gingival health. Discussions focus on marginal design, axial contour, finish and glaze. A technique for fabrication of a "soft gingival model" to be used as a guideline for developing axial contours is recommended.

Almost one half of the atlas is devoted to the development of full contour wax patterns in chapter three. A detailed description of the "skeletal technique" of waxing is given in which functional landmarks are located first, a three dimensional framework is developed next, and finally, axial contours are created. A discussion of full mouth reconstruction ensues, including the establishment of anterior guidance, occlusal plane and occlusal inclines.

Chapter four covers the fabrication of the metal substructure. Components discussed are: marginal design, porcelain supporting area, connector and pontic contour, alloy selection, finishing, and bonding agent application.

Posterior and digital manipulation are important aspects of all technical work, not just ceramometal technology. As such the material in chapter one could have been omitted from this text.

Although all the topics in chapter two relate to gingival health it lacks cohesive flow. It would have made for better arrangement had these topics been discussed in later corresponding chapters (ie. marginal designs with framework design, etc.)

Ceramo-metal Technology Volume One concludes with the topic of framework finish and bonding agents. Since this text does not cover porcelain, porcelain application, nor porcelain contouring, one would expect a Volume Two to be forthcoming which would include such discussions.

Although not recommended for the undergraduate dental student, the comprehensive approach and excellent illustrations of the Color Atlas of Ceramo-metal Technology do make it a worthwhile reference for dental technicians, graduate students or dentists with a keen interest in fixed prosthodontic laboratory technique. Δ

*This book was reviewed by:
Dr. Brent Moulding
College of Dentistry
University of Saskatchewan
Saskatoon, Saskatchewan*

MANAGING THE APPREHENSIVE DENTAL PATIENT

Robert F. Kroeger, DDS

*Heritage Communications, Ohio
1987, 190 pages, \$29.95*

It is an established and accepted fact that only slightly more than half of all Canadians visit the dentist in any twelve month period. The two principle reasons cited are that either they do not perceive a need or that their fear of the dentist prevents them from entering into the dental health care system.

Dr. Kroeger describes a program which he has used in his own private practice for a number of years to successfully treat many fearful patients. In fact his program has been so successful that the University of Kentucky College of Dentistry applied for and received funding to teach Dr. Kroeger's methods to other dental practitioners.

This book, by the author's own admission, is not intended to be a comprehensive treatise on the management of the apprehensive and fearful dental patient but rather it is intended to serve as a guide. Practitioners who are concerned and interested in treating this type of individual can implement a successful fear control of their own if they use the approach suggested by Dr. Kroeger and refer to readings which he recommends.

The book begins with a discussion of stress and appropriately so because the recognition and proper handling of stress

as it relates to the dentist, staff and the patient is the necessary antecedent to a successful fear control program. The author then methodically works through the physiology and psychology of pain and fear before discussing the sources and specific types of dental fear. After setting the stage, Dr. Kroeger describes the program which he employs. Throughout the book the author shares with the reader and welcomes them to use all of the fear-reducing techniques and instructions which he uses in his office to diagnose and help fearful dental patients select the most appropriate fear control program, thereby permitting them to receive quality dental care. Many of the suggestions offered for the fearful patient could also be used to make most of our patients' visits much more pleasant than they already are.

The book concludes with a chapter by Dr. Burton Press which describes how the development of a successful dental fear control program can be used to market a dental practice by building on the already numerous suggestions scattered throughout. In fact the book is subtitled "A Management Guide for the Dentist and Staff for Effective Practice Building and Internal Marketing".

Although not a must, every dentist would be well advised to get a copy of this book because there is something in it which almost everyone would find helpful. Δ

*This book was reviewed by:
Dr. Gary Jackson
Director of Patient Care
Faculty of Dentistry
Dalhousie University*

CURRENT TREATMENT IN DENTAL PRACTICE

Norman Levine B.K. Arora
C.O. Munroe B. Sturtridge
R.P. Desjardins R.F. Zambito

*1st Edition, Saunders 1986
533 p.p. illustrated*

Looking for an excellent reference book for general practice? Let me introduce you to "Current Treatment in Dental Practice" by six distinguished authors and many well-known contributors in the dental profession. This book will provide you with many of the recent advances in dentistry from oral medicine, to oral rehabilitation to hospital dentistry.

It would be impossible to describe in detail everything found in this text but

even at first glance it is evident the text was well planned and organized by the authors. This text is divided into seven sections and I will describe some of the highlights from each section.

Section One is titled Oral Medicine and Radiology. This section describes many of the common oral disease entities we encounter in our practice. Each disease entity is discussed by description, diagnosis and management. The radiology section discusses the hygienic use of radiation and the diagnosis and management of oral diseases seen radiographically.

Section Two is titled "Oral Rehabilitation". This section provides many of the recent advances in dental materials from amalgam, to composite resins to cements. Logically this is followed by the recent changes in operative dentistry from macrofilled resins, hybrid resins, visible light curing units to dental bonding. You may think not much has

changed when discussing cast restorations, well you're wrong, I think everyone will find a few tips in this chapter from die-spacing to post and core fabrication. Another interesting segment of this section is improving your removable partial denture services from the designing, mouth preparation to insertion. Other chapters deal with over-dentures, attachments and the current thinking on dental implants. To complete this section, a chapter on rehabilitation of the oncological patient provides an insight on how these patients are treated through the pre-surgical, surgical to prosthetic phase.

Need to brush up on your endodontics, from management of emergency treatment to apexification, it's all here. Updated procedures on vital and non-vital bleaching. Looking for recent advances in periodontics from flap designs to bone grafts, mucogingival surgery, armamentarium to endo-periodontic

relationship, this section provides an excellent review.

The final chapter is a brief review of the temporomandibular joint, examination, radiographs, diagnosis and treatment.

Section Three provides an excellent review of Oral and Maxillofacial Surgery, pre or post-operative complications, removal of unerupted wisdom teeth, management of jaw fractures to coordinated surgery and orthodontic treatment. Another chapter takes an in-depth look at a promising area of dentistry, the tissue integrated prosthesis in oral and maxillofacial reconstruction covering the surgical procedures, prosthodontic techniques to the follow-up results.

Section Four discusses the dental care for "Special Persons" which concentrates on a segment of our society which have often been overlooked — the needs and special care that is required for the elderly, the physically and mentally handicapped, to the oncological patient.

Section Five is titled "Pharmacotherapy". Do you know what medications your patients are taking for what health reasons and how this can affect your treatment for these patients? This section covers many common drugs, their interactions and how they can affect your approach in treating these patients.

Section Six is titled "Pediatric Dentistry". This section covers behavioural management, orthodontic assessment, restorative techniques to preventive measures.

Section Seven titled "Hospital Dentistry" deals with the dentist as a member of the medical staff, the vision of what will comprise a dental department in your hospital from emergency, in-patient services to management of a dental department.

It would be impossible to cover all the different sections of this text in great detail, but I can recommend this text as an excellent reference book for the new graduate as well as the seasoned practitioner.

The only negative point, I wish the print was slightly larger. Other than this minor consideration, I truly think this book is worthwhile and belongs in a dentist's library. Δ

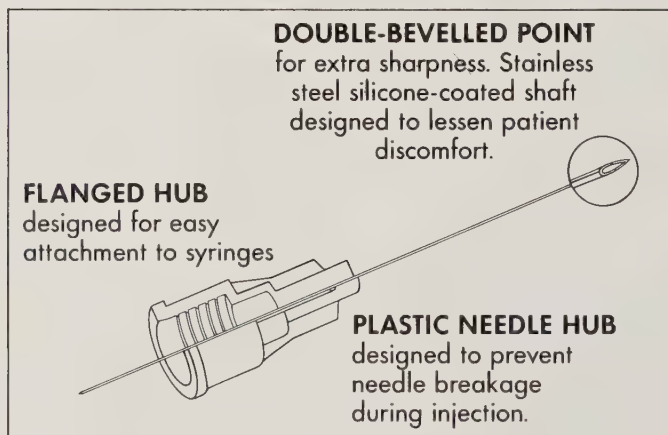
This book was reviewed by:
Dr. T.L. Boran
Division of General Dentistry
Faculty of Dentistry
Dalhousie University
Halifax, N.S.
B3H 3J5

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POSTERIOR COMPOSITE RESIN DENTAL RESTORATIVE MATERIALS

Eds. Guido Vanherle
Dennis Smith

Minnesota Mining & Mfg. Co. 1985
\$35.00
pp. 558

This book is a must for all dental libraries and for the personal libraries of those involved in teaching dental materials and/or restorative dentistry. Any dental practitioner who is interested in using composite materials for posterior restorations will find answers to most of his or her questions, theoretical and practical, in this book. Teachers and researchers will find it an invaluable resource.

It consists of the proceedings of the International Symposium on Posterior Composite Resin Dental Restorative Materials, held in January 1985, and sponsored by the Dental Products Division 3M Company, St. Paul, Minnesota, U.S.A.

The format makes for easy reading, in that it is arranged in six sections with a varying number of papers, discussion papers and open discussions in each. The sections are:— General aspects of current composite resins; Basic aspects of composite resins; Current status of posterior composite resins; Properties of composite resins; Clinical aspects of posterior composite resins; and the closing session. Each section and even each paper, could be read independently of the others, but obviously the "composite" is superior to the individual components.

Sections I, II, and IV lead the reader through a description of the evolution of the composite materials, their physical and chemical properties and two welcome papers on the biological and biocompatibility considerations of composite resins. The ever-intriguing topic of bonding to dentin is well presented with clear diagrams. Many of the materials-science papers relate the properties, both advantageous and disadvantageous, to clinical findings, such as post-operative sensitivity.

The third section presents very interesting papers on the current status of posterior composite resins in North America, Europe and Japan. The latter contains one of the few references in this book to the controversial intra-oral use of mercury. This section concludes with an overview of the use of posterior compo-

sites in clinical practice by R.G. Craig.

The clinical section (V) is the largest, the first paper being an excellent explanation by A. Boyde, of some anatomical considerations of tooth preparation and etching. The following papers clearly describe the details of tooth preparation, placement and finishing of composite materials to achieve optimum results, including reinforcement of the remaining teeth. The latter concept is stressed in the opening statement of W.H. Douglas' paper, where he describes the "twin goals of restoration and preservation". The history and rationale for the transition from Black's principle of extension for prevention to the preventive resin restoration, based on Buonocore's acid etching, is described by R.J. Simonsen. The illustrations, especially the colour photographs in this section, are of a very high quality. This section will probably be the most widely read although some pertinent clinical points are made in the

sections dealing more with the science of the materials.

It was disappointing to find so many typographical errors in the text. Spelling mistakes can be irritating, especially in technical terms, such as apatite, but the misspelling of names of well-known researchers is well nigh unforgivable.

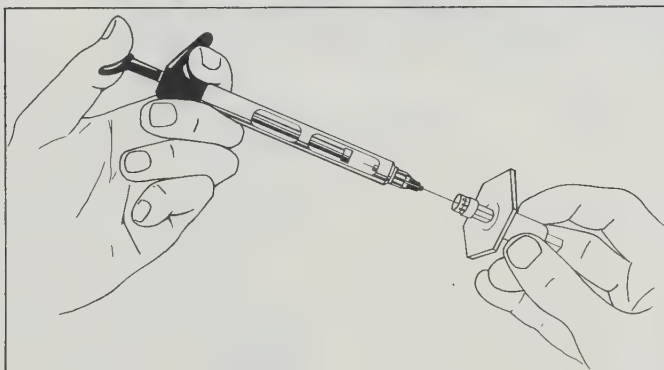
Dr. Smith, in his paper in Section I, ponders on whether, during the past decade, we have progressed, stood still or regressed. In the closing session he expresses his hope that the publication of these proceedings will be helpful to clinicians and researchers. With the wealth of information made available in this textbook, both clinicians and researchers must surely conclude that we have made progress and continue to do so. Δ

This book was reviewed by:
Dr. Helen A. Lyttle
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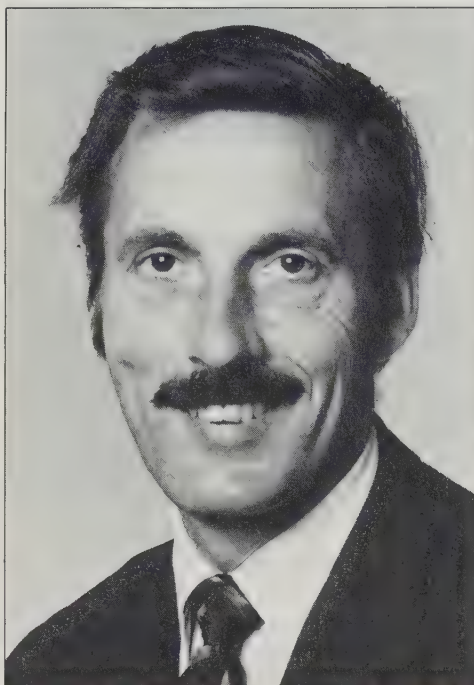
THE FUTURE OF BIOMATERIALS

Based on a paper presented at the CDA Annual Convention Halifax, N.S., 1986.

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The future of dental biomaterials depends upon research. Without the research which is necessary in order to provide knowledge, the professional application of new and/or improved materials and techniques will come to a halt. To this extent it can be said that the future of biomaterials is in the balance. True scientifically based improvements in dental biomaterials can only be made through the systematic application of dental research. The field of dental materials is going through a transition period in which a considerable volume of knowledge has accumulated during a very short period of time. This volume of new information has resulted in a considerable number of new concepts, technology and materials being developed.

The field of dental research has constructed an edifice of ever increasing complexity and splendor during the past 10 to 15 years. Unfortunately, the foundations in basic research may not be sound enough to withstand the heavy burdensome load of the structure which has been built. A number of critical areas exist where our lack of knowledge of the chemistry and molecular structure is limiting our ability to improve or synthesize new materials having desired proper-



ties. Today's knowledge of the properties of condensed matter allows the materials scientist to question the traditional criteria for the classification of materials as metals, ceramics or plastics. This new insight is revolutionizing technology. Glassy-non-crystalline metals can now be

produced, plastics can be made as strong as steel and fibrous tough glass-ceramics are being developed. Scientific discoveries in dental biomaterials cannot be planned to order but once they have been made it is extremely important to have the facilities to undertake the necessary development testing and evaluation. New ideas in biomaterials and techniques will have to grow at the expense of older materials and methods. It is essential that we have strong research based dental schools which can provide the evidence that the new is better than the old. The true benefits of scientific advances in biomaterials can only be secured and harnessed if they are properly tested and developed into a form that is acceptable to the general practitioner.

The Medical Research Council funds received by dentistry are relatively modest; of the total budget a mere 1.5 per cent was allocated to dental research in 1978/79 while in 1984/85 a more acceptable 2.5 per cent was obtained. However, the Medical School at Dalhousie University alone received 3.6 per cent of the MRC funding in 1984/85 over a million dollars more than all ten dental schools in Canada. What is perhaps more disturbing is the fact that 95 per cent of

all Medical Research Council grant funding obtained by dentistry is concentrated in four dental faculties in Alberta, UBC, Manitoba and Toronto. The "Reference List of Health Science Research in Canada" compiled in July 1986, shows that only 33 out of 1,980 (1.67 per cent) operating grants were held by individuals whose main academic appointment was in a dental faculty. While dentistry alone receives a very small slice of the MRC research fund cake, the area of dental biomaterials research receives only a few crumbs. Only a very small percentage of research dollars go toward biomaterials research. This despite the fact that dentistry is one of the few health professions in which the success or otherwise of most treatment procedures is dependent upon the use of materials and techniques associated with treatment. Research equipment and personnel costs have risen dramatically in recent times. This has further eroded the already modest funding provided for dental biomaterials research.

The funding of biomaterials research in dentistry is often faced with a dual dilemma. The Medical Research Council committees on the one hand may feel that the synthesis and evaluation of biomaterials is an industrial process which has no place in medical research. The Natural Sciences Engineering Research Council (NSERC) committees however, see research into development and testing of biomaterials as a medical research activity. The committee members of both of these agencies are either trained in the biological sciences or as industrial chemists and engineers and neither claim to understand the field of biomaterials. Many researchers in the field feel that the area of biomaterials gets the worst of both systems.

The attempt by the federal government to privatize research in Canada has added a further complication. The review committees of granting agencies expect biomaterials research to be funded by private industry. However, the reality is that companies are generally unwilling or unable to spend money on basic research into biomaterials. Many companies believe that basic research should be conducted within the university system and be supported by the granting agencies. Some companies are prepared to spend a little money on short term projects which are designed to endorse and legitimize an existing product, such companies very often expect to have complete control of the publication of any results from such studies. Many scientists faced with this situation are not prepared to prostitute themselves in this way.

The matching funds scheme of the federal government has not been well conceived and I believe will result in a significant decline in research funding for those researchers operating in the area of health sciences over the next five years. This is extremely unfortunate because Canada has an excellent opportunity to become a leader in the area of biomedical and dental research during the next decade.

The annual total expenditure in Canada for dental services was estimated as \$1.2 billion in 1981 by Lewis et al. The retail market for consumables was said to be of the order of \$150 million per year and yet we spend so little on independent research into biomaterials.

Dentistry has a large number of unanswered questions requiring research attention, these should be addressed by a multidiscipline approach. The combined efforts of histologists, microbiologists, materials scientists and clinical dentists will be required to solve the problem of biocompatibility of materials and our failures in restorative dentistry which result in secondary caries at the margins of five to six per cent of our restorative materials. Team work of research specialists combining clinical, basic and applied science is essential in order to conduct the research required to solve current and future dental problems. Dental science in our universities should consist of both basic and applied science. It is essential that a proportion of our research effort in dentistry be directed to basic science in order to allow dental research to keep abreast of scientific developments.

Trend line predictions

If we are to attempt to forecast future trends, it is of value to look both to the past and to the currently developing areas in order to obtain a trend line from which to extrapolate into the future.

Advances more often than not seem to occur by chance rather than by design. However, some predictions for the future can be made. Considerable progress is being made in the field of adhesive chemistry. Our knowledge in this area of development will continue to grow during the next few years. In biomaterials research there is an increasing awareness of the importance of the biocompatibility of materials. Undoubtedly one of the most significant developments in dental biomaterials took place in the mid 1970's. I refer, of course, to the increased attention and level of sophistication given to advertising and promotional efforts by manufacturers.

It is disasters, not blessings which could shatter the best predictions for the development of dental biomaterials during the next 20 or 30 years. If an off-the-cuff guess was made as to the kind of unexpected dental problem in the next 20 years which would influence the development and use of materials, the following might be considered:

1. Excessive use of implants in unsuitable cases which may produce a crop of patients with severe complex prosthodontic problems requiring new application of biomaterials. Litigation settlements against manufacturers and dentists are reaching astronomical levels which can be expected to have some influence on the pace of development and use of new biomaterials:— or perhaps we may see:
2. Cracking and fracture of embrittled fluoride rich enamel leading to hidden dentine caries in elderly patients — or more likely:
3. Rampant root caries in the older population on a scale we have never seen before. Dentistry we believe, will increasingly become a profession dealing with the diseases of old age. The 80-year-olds are the fastest growing group of the population in North America.
4. The danger of major changes in our immune system are very real. Biologists are now able to modify bacteria, to reconstruct viruses and even to construct new viruses which have never existed before in nature. The possibility of radical changes in the oral flora cannot be ruled out due to environmental or food chain contaminants. Or even the unthinkable that:
5. The excessive use of posterior composites bonded to teeth by acid etching and dentine adhesives may result in a spate of dental problems due to stress relief fractures in brittle enamel or at the enamel/dental junction or perhaps we may find:
6. A marked increase in the prevalence of periodontal disease due to:— rough surfaces close to the gingival margins and in interproximal areas of cosmetic veneers and posterior composites. Increased periodontal problems may also occur due to poorly designed etched metal bonded prosthesis having excessive over contouring. We cannot rule out the possibility that:
7. The rate of caries may once again start to climb due to some as yet, unknown factors. This is not entirely impossible, or perhaps we may see the unlikely major breakthrough in the development of a vaccine for dental caries.

8. The gross shortage of vital raw materials or minerals may occur. For example, chromium ore is only mined in any quantity in the USSR and South Africa. Political decisions could well limit the availability of such a mineral. It is estimated that the known deposits of mercury-yielding ore in Spain and Italy will only last for a further 50 years. In 1978 there was a rebellion in the Katanga province of Zaire. This may well have gone unnoticed in the industrialized countries if the Katanga Mines had not been the world's largest suppliers of cobalt. The price of cobalt increased by a factor of five almost overnight.

Any of these scenarios may have a dramatic effect upon the use and future development of biomaterials. The economic factors are also going to play a very significant part in future developments and use of materials in dentistry. Private dental insurance has grown from less than 2 per cent in 1970 to well over 60 per cent today. A recent survey indicated that 370 companies had dental insurance plans. Seventy-five per cent of these were fully paid by the employer and 58 per cent included a full range of ser-

vices. A further increase in such third party payment systems may have a significant influence on the use of dental restorative procedures and materials. Economists, like the weatherman, are wrong in their predictions for a large percentage of the time. However, certain economic factors are obvious. The foundations and structure of the world economy are changing. During the past decade the primary-products economy has become detached from the industrial economy. Capital movement rather than trade in goods and services is becoming the main driving force for the world economy. These changes in the world economy can significantly influence the price of raw materials and the investment in research and development. In May 1986 the price of silver on the London market closed below \$5 (US) an ounce, a far cry from the \$50 an ounce during the 1979-80 attempt by the Hunt Brothers of Texas to corner the silver market. The manufacturer of dental and biomedical materials is increasingly becoming dominated by a few large multi-national companies. Rationalization of the dental market has taken place to some extent with the elimi-

nation of many low volume sale specialty materials resulting in fewer brands being available. Companies in the dental field are often reluctant to invest money in research and development when they have the fear of an impending takeover from another multinational hanging over them. In the general field of biomaterials the future may well belong to ceramics. It is estimated that the market for bio-ceramic materials will increase by 29 per cent per year and will be worth \$400 million by 1990 (Johnson and Schulz 1985). In attempting to predict the future we should always aim to expect the unexpected. One prediction we can make however, with reasonable confidence, will be that we shall see a smaller volume and weight of restorative materials being used to replace natural tissues during the next 20 years.

Where have we been and where are we going?

Thirty-two technological dental advances have been selected (Table 1) which have shaped the development of dentistry during the past 2,675 years. If we look at the materials in use in dentistry over fifty years ago it is indeed surprising to find that six of the eight materials on the list are still in use today; gold, porcelain, amalgam, zinc phosphate cement, stainless steel and base metal alloys, not to mention such materials as zinc oxide eugenol and gutta percha.

It is said that history repeats itself and this would seem to be true if we look at the first amalgam war of 1840-1850. It is also said that history is a powerful teacher. Looking at the list of advances which have been made in dentistry the one interesting lesson which emerges is the inordinate length of time it may take for a material or procedure to become well established or further developed following its inception. However, non dental examples are just as plentiful. Some say that the invention of the eyed steel needle was one of the greatest technological advances in human history, comparable in importance to the invention of the wheel and the discovery of fire. The eyed needle appears astonishingly early – some 40,000 years ago. However, it was not until 1830 that Barthelémy Thimmonier, a poor tailor in France, devised the first sewing machine. In looking at the list of dental advances in Table 1 we can see that typically it may take from 10 to 20 years for a material or technique to become firmly established.

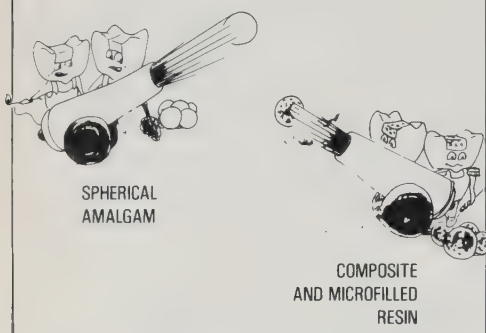
Acrylic resin was developed as a denture base material in 1935 by the ICI com-

TABLE I

Thirty-two dental technological advances in the past 2,675 years

Year	
700 BC	Gold
1774	Dental Porcelain
1825	Dental Amalgam
1840-50	First Amalgam War?
1844	N ₂ O Anaesthesia
1859	Vulcanite
1890	Zinc Phosphate Cement
1900	Lost Wax Casting Method
1912	Silicate Cement
1919	Stainless Steel
1929	Cobalt Chromium Base Alloy
1935	Acrylic Resin
1945	Fluoridation
1955	Acid Etched Enamel
1956	Porcelain Fused to Gold
1957	Bis GMA and Composite Resins
1960	Polysulphide Impression Material
1963	Air Turbine Handpiece
1963	High Copper Amalgam
1965	Silicone Impression Material
1965	Aluminous Porcelain
1968	Zinc Polycarboxylate Cement
1970	Porcelain Fused to Base Metal
1971	Solution developed to dissolve caries
1972	Glass Ionomer Cement
1973	Urethane Dimethacrylate
1974	White Light Photopolymerizing
1980?	Second Amalgam War!
1981	Phosphorus Ester/diacrylate (dentine resin adhesive)
1982	Posterior Composites (second generation)
1983	Cloning of Enamel Gene
1984	Cermet Material (Silver/glass-ionomer)

THE AMALGAM WARS 1840-1850 • 1980-1986



It is estimated that the known deposits of mercury yielding ore in Spain and Italy will only last for a further 50 years.

pany in Germany. However, it took the Japanese invasion of Malaya during the Second World War which cut off the supply of natural rubber to finally convince the dental profession in the UK, that they had to abandon the use of vulcanite. Acid etching of enamel introduced in 1955 took 10 to 15 years to become an almost routine procedure. Fluoridation introduced over 40 years ago is still a contentious issue (Diesendorf 1986). The Canadian research which led to the first high copper amalgam had to wait more than 15 years before such materials became established in dental practice. Aluminous porcelain, introduced in 1965 by McLean, took an incredible time to be recognized in North America. The very slow acceptance of silicone impression materials was partly due to problems associated with the chemistry of some of the very early materials. The introduction of Bis GMA and composite systems following the work of Bowen at the National Bureau of Standards in 1956 is a history in dental evolution in itself.

Some of the most productive and innovative developments have perhaps come in the past 16 years, since Smith introduced the zinc polycarboxylate cement in 1968. However, once again we see examples of the inordinate length of time it takes for procedures and materials to become routine in dental practice. The introduction of glass ionomer cement and the solution developed to dissolve caries way back in the early seventies, and the development of white light photopolymerizing resin systems developed some 12 years ago. However, perhaps the major lesson we can learn is the fact that the introduction of different materials and techniques can combine together to collectively change the pace of development and type of dental treatments performed.

Chance and necessity

New dental materials will be developed as a result of either chance and/or necessity. As Galton once said "When apples are ripe they fall readily". A good example of chance and necessity in the development and establishment of a dental material is illustrated by the denture base material, vulcanite. Charles Goodyear accidentally overheated a mixture of rubber, sulphur and white lead to produce the first vulcanized rubber in 1841. Anaesthesia by means of nitrous oxide was discovered as a means for painless extraction of teeth, three years later by Horace Wells, a young dentist from Hartford, Connecticut. The development of vulcanite as a denture base material responded to the needs of the time due to mass extraction of teeth. These two isolated discoveries together changed the face of dentistry for the next 100 years or so with painless mass extraction of teeth and the fitting of artificial vulcanite dentures on a massive scale. A further example can be given of chance and necessity with the development of the porcelain fused to gold system in the late 1950s. This development was followed by the introduction of a much improved and more accurate elastomeric impression material — (polysulphide), which combined with the introduction of the air turbine handpiece, significantly influenced dental treatment. These three developments combined together to dramatically increase the volume of fixed partial dentures and crowns provided for a more affluent post-war population.

The development of the glass ionomer cement system by Dr. Alan Wilson in the

UK provides another example of chance and necessity. Wilson of the Government Chemist's Laboratory had been given the job of improving the quality and performance of the silicate cement filling materials used in the British National Health service in the late 1960s. After intensive study, Wilson concluded that the silicate cement had a built in problem. The loss of aluminium ions in low pH from the matrix of the cement resulted in its disintegration. Dr. Dennis Smith who was at the time with the Faculty of Manchester University Dental School developed the zinc polycarboxylate cement system in 1968. The polycarboxylate cement was the first dental material to chemically bond to natural tooth tissue. The polyacrylic acid (PAA) developed by Smith attracted Wilson's attention. Why not mix the organic acid with the aluminosilicate glass of silicate cement instead of using phosphoric acid? Unfortunately, the mixing of these two constituents did not readily set because of the fact that the organic P.A.A. could not easily leach the aluminium and calcium ions from the glass. Not to be beaten, Dr. Alan Wilson synthesized a new glass system, which was ion leachable by the PAA. The necessity to try to improve the silicate cement for the British National Health Service and the simultaneous development of PAA by Dennis Smith resulted in a further breakthrough. A new species of dental restorative material was born.

The various influences which come into play to dictate the development of new biomaterials are illustrated in Fig. 1. The life style and economic climate both have a significant influence on the development of new restorative materials.

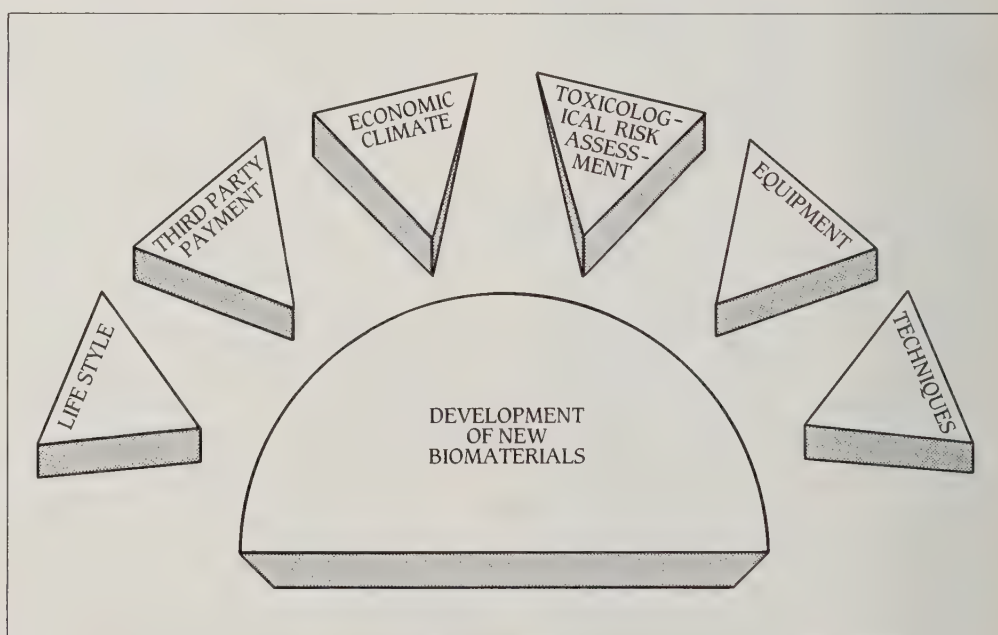


Figure 1 The various influences which come into play to dictate the development of new biomaterials

The development of specific techniques or equipment may combine to influence the adoption or development of new or improved materials. The increase in third party payments can have an effect on the pace of acceptance of new materials and techniques. We believe that insufficient basic research is conducted in dentistry, often dental researchers are concerned that they are not directing their research efforts towards a practical goal. As Von Braun once said "Basic research is what I am doing when I don't know what I am doing". Some may argue that dentistry is fundamentally non-scientific. We often end up putting the cart before the horse.

Amalgam vs composites

Six years ago Canadian dentists were placing some 29 million fillings a year with the average dentist placing 63 amalgams and 26 composite restorations per week, according to a survey by Lewis et al (1981). This represents a volume of 777 m³ of amalgam and 550 m³ of composite material being placed each year. These volumes are similar in size to a small home or apartment 30×30×30 feet for amalgam and 27×27×27 feet for composite material. That's a lot of material! In 1981 the average Canadian dentist spent over \$2,000 on filling materials, about \$1,800 on amalgam and some \$375 on composite materials. The average 1981 cost of amalgam was estimated at \$1.4/g compared with \$2.5/g for conventional composite and \$5.0/g for more recent light cured materials. The conventional composite retail market in Canada had an estimated value in 1981 of \$2.75 million dollars and the amalgam market has been estimated at between \$12 and \$13 million dollars. Based upon the 1981 figures a 20 per cent increase in the use of composite posterior materials in Canada would represent over half a million dollars. The fact that we had \$12-13 million dollars of amalgam sales vulnerable to the potential increase in the sale of posterior composite material helps to explain some of the pressures operating in the dental marketplace.

Since 1981 the number of restorations placed by Canadian dentists may well have fallen below the estimated 29 million figure given by Lewis et al. According to some estimates (Erickson 1985) a significant reduction has taken place in the total value of amalgam sold during the past five years, the value of sales in the U.S. having fallen from \$56.5 million in 1981 to less than \$31 million in 1984. This may be due to a number of factors. 1) less restorations being placed, 2) a

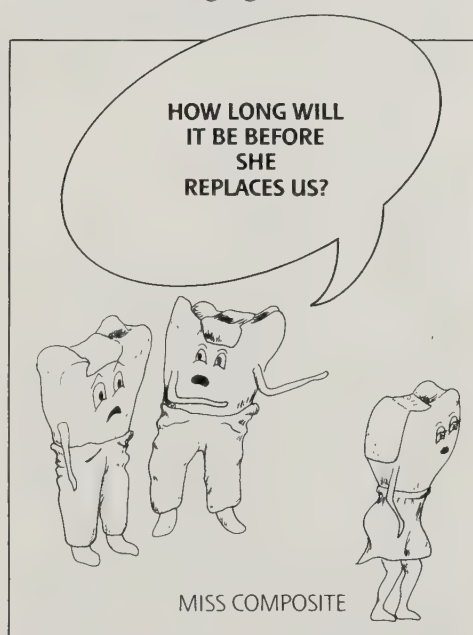
much lower price for silver, 3) the increased use of alternative materials, and 4) adverse publicity given to the use of mercury (i.e., scare tactics). The value of the sales of posterior composite materials on the other hand has increased dramatically during the past five years. In the U.S.A. the sales have increased from as low as \$290,000 in 1982 to \$6.4 million in 1984. (Erickson 1985). We suspect that there are a number of factors which can help to explain this increase. 1) high powered selling techniques of multi-national companies, 2) increases in the price of materials in the past two years, 3) improved quality of materials 4) convincing clinical performance data, 5) unreasonable adverse publicity given to amalgam. The truth relating to the shift in total value of the sales of amalgam and posterior composite materials is probably due to a mixture of all of these possible influences.

The mercury scare has been well addressed by an excellent feature in the March 1986 issue of Consumer Magazine. The article deals with the attack on the use of mercury by some members of the dental profession. We still know so very little about the toxicology of mercury and other trace elements in the body.

Canadian dentists were said to have put 26,000 lbs. of mercury into the environment in 1971 (Cooke and Beitel). For this reason environmentalists and provincial governments began to look more closely at the use of mercury in dentistry. The Threshold Limit Value or T.L.V. for atmospheric mercury has been set by the Occupational Safety and Health Administration at 0.05 mg Hg/m³ of air. This

represents the time weighted average (TWA) over an eight-hour day with no adverse effects on health. The 'Health Hazard' from mercury vapour is defined as exposure to concentrations of inorganic mercury greater than 40 per cent above the T.L.V., that is greater than 0.07 mg/m³. Thus the "Health Hazard Risk" is set at 700,000 times the normal 'fresh air' value. The National Institute for Occupational Safety and Health have a lower and more restrictive T.L.V. of 0.02 mg/m³. A study by Jones et al (1983) of some 375 dental offices in Atlantic Canada indicated that some three per cent of the readings of mercury vapour measurements in the general location of the dental chair were at or above the 0.05 mg Hg/m³ of air. Further analysis of this data combined with evaluation of mercury in hair and nails of dental personnel indicates clearly that improved mercury hygiene, elimination of carpets, use of disposable capsules can clearly be seen to lower the level of mercury contamination in the operatory.

An analysis has just been completed of mercury in hair and nails of dental personnel (Jones et al 1987). Interestingly it was possible to correlate the number of amalgam procedures with the level of mercury in the nails of dentists. In addition, a significant correlation was found between the mercury in hair of dentists and assistants and the use of pre-capsulated and re-usable capsulated amalgam procedures. The question which has often been asked, is whether or not the health of the average dentist is any different from that of the general public? A report in the Journal of the American Dental Association in 1975 indicated that the mean average age at death according to 15 different disease categories which were identified as cause of death, were not significantly different for dentists compared to the general population. If mercury is a problem then surely the dental profession can be regarded as a positive control group because they are exposed to much higher levels of mercury than the average individual who may have three or four amalgam fillings. However, the main problem with evaluating chronic exposure to trace amounts of mercury is that it may not manifest itself in readily measurable clinical signs and symptoms for many years. It is in fact very difficult to separate damage to the central nervous system due to mercury from the symptoms of old age. Our view is that the evidence we have to date indicates that the use of mercury in dentistry does not present a problem to the vast majority of patients, or to the dental profession, if



Composite systems still have a long way to go in terms of development before they can completely replace amalgam.

proper procedures are followed. This represents the established view of scientific dentistry. Most would agree that the level of research into the potential damage posed by use of amalgam as a restorative dental material should be increased.

We however, predict that amalgam will no longer be used as a filling material by the year 2036. Dr. Ralph Phillips has made predictions on many occasions during the past 20 years — he keeps updating the year. However, we are very confident that our own prediction will be correct. The reason is that the estimated world reserves of mercury available to be mined indicate that the resource will be depleted in 50 years. The amalgam wars will finally have come to an end.

How long will it be?

Others believe that it is only a matter of time (much less than 50 years) before amalgam is completely replaced by some form of composite material for posterior restorations. It is clear however, that the vast majority of clinical and laboratory studies indicate that posterior resin composite systems wear more readily than amalgam. Naturally, wear depends upon the tooth position, the size of the restoration (cavity) and the type of opposing occlusion. In addition, the presence of porosity, the degree of polymerization and the size, shape, amount, and type of filler combined with an effective coupling agent have a significant effect. The new one-paste photopolymerizing systems have considerably reduced the level of porosity in restorations of this type. The white light systems have considerably improved the level of polymerization obtainable. New manufacturing techniques have increased the volume of inorganic filler.

Resistance to wear is the one phenomenon which is the most difficult to evaluate in materials science. The mechanisms of clinical wear are difficult if not completely impossible to replicate in the laboratory. The very methods employed to produce abrasion and/or erosion of materials tend to themselves dictate the data which is produced. In reality only loosely comparative data can be produced at best. Considerable emphasis has thus been placed upon controlled clinical trials. The quality of such trials has considerably increased in recent years. However, clinical trials do not in themselves lead to simple answers. Many experienced clinical researchers cannot agree upon which is the best method for evaluating the loss of material from restorations. Leinfelder et al (1986) have reported on three years' data for the wear of nine different pos-

terior composite systems. A comparison was made between two different methods of evaluating the clinical wear. One method (the US Public Health Service System) was used, in which a direct clinical evaluation is performed by trained calibrated clinicians who have to achieve an inter examiner agreement of at least 85 per cent. The second method involved an indirect measurement by comparison of calibrated standard casts obtained at specific intervals of time from which measurement of wear in mm were made. The authors concluded that the method of measuring the loss of height of material on the casts indicated that the wear rate tended to decrease as a function of time. In contrast the same groups of materials evaluated by the U.S. Public Health Service system indicated that occlusal wear rates generally increased with time. However, other researchers such as Dr. Bill Douglas of the University of Minnesota believe that it is much better to measure loss of volume of material rather than loss in height. The debate on the wear of composite materials will continue for many years to come. A major problem with many clinical trials conducted earlier was the fact that the formulation of materials changed during the study or some products were withdrawn from the market.

Many leading authorities believe that the current composite resin systems although much improved over earlier versions, are still far from ideal. A major problem relates to the fact that a large amount of potentially reactive methacrylate groups remain unpolymerized in these polymer materials. The presence of unsaturated carbon-carbon double bonds on pendant methacrylate groups renders the materials susceptible to degradation (Ruyter 1985).

Do bonded posterior composites actually strengthen teeth?

Investigators (Hood 1985, Douglas 1985) have demonstrated by laboratory tests that composite restorations which have been acid etched to enamel and have been placed using dentine bonding agents, seem to result in a strengthening effect compared to using amalgam as a restorative material. We should recognize in all of this type of laboratory testing that extracted teeth are not the same as vital teeth functioning in the mouth and there may be a large variation in properties from one tooth to the next. However, some interesting experiments conducted by Causton and others in the UK (1985) has thrown some doubt on the idea that

posterior composites may strengthen teeth. These researchers found that the cusps of molars and premolars underwent an inward movement of the order of 2 per cent over the period of a week. This deformation of the cusps was attributed to polymerization shrinkage of the bonded composites. The 2 per cent movement was found to take place under both wet and dry conditions. The authors concluded that stress relief occurs because of fractures occurring within the tooth structure. The consequences of such fractures are indeed quite serious. Our own research (Jones et al 1986) has been able to show, by means of ultrasonic dynamic measurements, that the so-called hybrid composites have significantly higher Young's modulus values compared to conventional and microfilled materials. However, we believe that posterior composite systems still have a long way to go in terms of development before they can completely replace amalgam. We expect amalgam to be with us well into the 21st Century.



Do bonded posterior composites actually strengthen teeth?

The winds of change

Harold McMillan, Prime Minister of Britain in the 1960s, coined the phrase "The Winds of Change are blowing through Africa" — those winds have now reached gale force. I have chosen to paraphrase

McMillan's words in relation to dentistry. "The winds of change are blowing through dentistry." We are rapidly moving from a period of repair to one of prevention as indicated in **Table 2**.

In 1896 we had Painless Parker, in 1986 we had Painless "Caridex". According to Dr. Barmes of the World Health Organization, the required dentist to population ratio in the US by the year 2010 will be down to 1:20,000. Oral health trends for 12-year-olds in 1983 show that DMF scores and the periodontal index (CPI) values are falling rapidly for industrialized countries. However, it is very hard to believe that it will only require the same number of dentists in the US in the year 2010 as in the late 19th century. One aspect which will have to be addressed however, is the unmet dental needs of certain groups — such as the aged and underprivileged. As Huai-Nau Tzu (122 B.C.) stated, "A good doctor pays considerable attention to keeping people well so that there will be no sickness". The general public and dentists alike should pay attention to this philosophy of Huai-Nau Tzu. We also recognize that some 40 per cent of the population in Canada do not visit a dentist on a regular basis and about nine per cent never visit a dentist.

Coronal and Root Caries

A sample analysis of 2,288 patients in Hartford, Connecticut, by Newitter et al (1986) indicated a mean value for recurrent coronal caries of 5.4 per cent for restored teeth. However, the 20-29-year-olds had a value of 6.8 per cent falling to 4.3 per cent for the 40-49 age group. Interestingly, the older age groups show an increase up to 5.6 per cent at 50-59 years and 70-79 years. Prevalence of recurrent coronal caries around anterior composites was found to be 6.0 per cent compared to 5.4 per cent for posterior amalgams. What will the percentage be for posterior composites? That is the question. It has been shown that the mean amount of plaque found on composite material after eight hours is considerably higher than that found on amalgam (Skjorland 1973). Professor Ian Hamilton, a renowned dental microbiologist from the University of Manitoba, speculates that perhaps the presence of plaque is a good thing, because it may improve the effectiveness of fluoride activity.

A group in Iowa has conducted extensive studies on root caries — it would seem that environmental effects and life style may be involved with the incidence of root caries. One study indicated that as

TABLE II

The winds of change

700 BC	Primitive attempts at replacing lost dentition.
1840-1900	Mass extraction of teeth, complete dentures.
1900-1920	Minimal repair of a few.
1920-1950	Maximal repair for a few.
1950-1975	Widespread repair.
1975-1986	Preservation of dentition and supporting structures.

many as 41 per cent of the sample group of 483, 65 years old and over, developed root caries. Professor Forgay of Dalhousie University together with colleagues at the University of Manitoba (1986), has studied 141 individuals and found that mandibular teeth exhibited higher root caries rates than the maxillary teeth. It is conceivable that individuals who have been relatively free from caries for a number of years will tend to be neglectful and not attend a dentist on a regular basis which may result in increased caries in old age.

Further extensive epidemiological studies of the prevalence and incidence of root caries in the elderly population are urgently required so we can develop and apply materials and techniques to the problem.

Fluoridation

We all know that fluoridation of water supplies is responsible for the significant decline in dental caries. Or do we? A recent paper published in the prestigious scientific journal 'Nature' (July 10, 1986) by an Australian scientist Mark Diesendorf, challenges the evidence that the decline in caries is related to fluoridation of water supplies. The author, a mathematical statistician, points to the poor quality of research on fluoridation and is particularly critical of the research design which in many cases had no blind examination or adequate baseline measurements and used inappropriate statistical methods. The author states that the hypothesis that fluoridation of water supplies has a very large benefit on reduction of caries requires re-examination by epidemiologists, mathematical statisticians, and others outside of the dental profession. This evaluation, he claims, should be repeated using well designed randomized controlled studies. A former colleague, Professor James and others in Birmingham, England, speculated about ten years ago, in 1977, that other factors than fluoride could be actually driving a cyclical variation of caries with time. If

so, it is possible that the rate of caries could start to increase towards its former high levels of the 1950's. The question of dental caries needs further evaluation in terms of immunology and particularly the influence of diet. Epidemiological investigations and animal studies have clearly demonstrated that the prevalence and incidence of dental caries is related to the frequency of ingestion of readily fermentable carbohydrate (Read and Knowles, 1938, and Frostell and Baer, 1971). The possibility that the widespread use of antibiotics may be suppressing streptococcus mutans in the mouth combined with total fluoride from the environment and toothpaste or perhaps some as yet unknown factors may be involved. According to Diesendorf large reductions in tooth decay have been observed in both fluoridated and unfluoridated areas which cannot be attributed to fluoridation. We are clearly going to see the debate on this issue continuing for the next few years.

Since Grand Rapids in Michigan became the first community to adjust the fluoride level of its water supply, antifuoride groups have consistently played upon the fears and lack of knowledge of the public. A recent symposium (AADR 1985 Las Vegas) on the antifuoride groups listed their tactics as "the big lie" innuendo, half-truths, and statements taken out of context, the quoting of so-called "Experts", the use of scare words, the exploitation of the media, and the utilization of the conspiracy gambit. The recently published paper by Mark Diesendorf in *Nature* will give these groups a field day. As Konrad Lorenz once said "Truth in science can be defined as the working hypothesis best suited to open the way to the next better one". We believe that increased attention will be paid in the future to developing materials which can provide fluoride release.

Biocompatibility — the need for toxicological risk assessment

One of the major influences on the pace of development of new biomaterials has to be the future requirements of biocompatibility. The general population as well as governments are becoming increasingly concerned with the potential for toxic materials being placed in contact with tissues of the body. Individuals are becoming concerned about the challenge to health posed by the environment. Cancer risks are quoted for drinking tea and coffee or for eating animal protein or fat as well as for smoking cigarettes or drink-

ing alcohol. Some 340,000 new cases of cancer of the mouth and pharynx are reported each year according to the WHO. Clearly there will be increasing pressure in the future for extensive biocompatibility testing of all new classes of dental materials and indeed for those classes of materials which have been in use for some time. The importance of biocompatibility has been recognized in Canada by the publication of a national standard for biocompatibility testing (CAN3-Z310-6-M84, 1984).

The International Standards Organization published a Technical Report #7405 "Biological Evaluation of Dental Materials" in 1984. This document is based upon the FDI document "Recommended Standard Practices for Biological Evaluation of Dental Materials". There is a considerable need to evaluate our existing dental materials in accordance with national and international recommended test methods and to further refine and develop new test methods where necessary.

The ISO International Standards Organization is the largest group in the world representing industrial and technical collaboration. Standards exist for a wide range of industrial and household products as well as for medical and dental materials. The ISO committee dealing with dentistry is ISO/TC 106. The United Kingdom holds the secretariat of this technical committee. This committee has eight sub committees. Sub committees 1 and 2 deal with materials. Canada holds the secretariat of the important sub committee dealing with filling and restorative materials, and is actively involved with the work of sub committee 2 which deals with prosthodontic materials. In addition, Canada is playing a leading role in a number of the other ISO dental committees.

It is important to ensure that materials and devices imported or manufactured in Canada and used in the provision of dental health care meet a minimum standard of performance and are safe to use. Canada, through the Canadian Advisory Committee to ISO TC/106, is actively participating in the development of all dental ISO standards. It is clearly in the best interests of the patients, dentists, third party insurers and manufacturers to have a system in place which will ensure a minimum standard for the performance of dental materials. It is the standards for biological safety and performance criteria, especially longevity, which will become of much greater importance in the future. At the moment there is no procedure for certifying dental materials which come onto the market in Canada. The establishment of national and inter-

national standards will help to control and prevent the importation of inferior products. However, there is a need once national standards are established to develop a capability to carry out routine performance testing to ensure compliance with these standards. We are still struggling to obtain funding to set up a compliance testing program in Canada. Such testing is essential since a manufacturer's source of supply of raw materials may change. This may result in production of a substandard product. Development testing in a standards program, as well as routine evaluations of products is an essential component of such a system. The rapid development in recent years of materials science has caused a bewildering array of materials to be added to the relatively few materials available in the past. There has been an enormous increase in both the number and type of new dental materials during the past 15-20 years.

Animal Rights

Dental research kills rats — we cannot deny that this is true. A conference on ethics and experimentation held in Ottawa in March, 1986, reported that recent public opinion polls in the U.S. had revealed that 77 per cent of the public supported the use of animals in research, 70 per cent supported their use in basic research, and 80 per cent supported their use in the testing of new drugs and products.

However, against this background of substantial public support, the organization and intensity of the animal rights movement is increasing. Pressure groups are demanding that universities and hospitals allow inspection of their facili-

ties by activist groups. Those institutions which fail to comply will no doubt be subject to demonstrations, picketing, sit-ins, etc. At a time when both the public and the government are demanding biocompatibility data for all materials used in the body, it is clear that we will have to rely much more heavily in the future on alternate forms of biological evaluation of our materials, such as cell culture methods. Despite the increased adoption of cell culture methods there will still be a need for some animal experimentation.

Natural tooth is our best material: Filling teeth with enamel?

The natural tooth took many millions of years to evolve from the scales of our aquatic ancestors. Professor Alan Boyde of University College London, UK has been known to state that most dental tissues are destroyed by dentists. The natural tooth is our best material which took many millions of years to develop. Man has only been looking for a substitute for the past 2,500 years or so.

Since Crick and Watson discovered the DNA structure in 1953, there have been many exciting advances in biological research. Methods have been developed for cloning genes. Recombinant DNA techniques are now being used to construct and clone recombinant DNA molecules containing genetic information for enamel proteins.

Dr. Harold Slavkin of USC and his colleagues have isolated the mouse tissue that produces enamel proteins and have cloned the mouse gene that codes for one of the enamel proteins. There are thought to be four such enamel proteins which are secreted by the ameloblasts. The research team at USC have now been able to prove that the gene they cloned in the mouse is identical to that found in the human. The team has inserted the human gene into a cell line the Chinese hamster ovarian fibroblast cell, which is capable of synthetically producing the human enamel protein. It is not clear at this stage if the mixing of four different proteins together, will be capable of producing useful enamel. If this research is successful in the next few years, it may be possible to produce an artificial material by growing human enamel crystals from solution. A number of large companies such as 3M and Johnson and Johnson are interested in the future prospect of using synthetic human enamel as a filling material. It is predicted that we may be using enamel as a natural restorative material in teeth within the next 30 or 40 years.



Recent public opinion polls in the US revealed that 77% of the public support the use of animals in research.

A sticky future for dentistry

Many may be forecasting a sticky future for dentistry in the next 10 or 20 years. In the area of biomaterials, exciting possibilities exist for the development of new adhesive systems and materials.

At the moment we have two classes of materials which are capable of providing adhesion to tooth enamel and dentine.

1) The polyelectrolyte cements

2) The phosphorous esters of diacrylate resin in combination with low molecular weight monomers and alcohol.

The first group comprises the zinc polycarboxylate cements and the glass ionomer (or glass polyalkenoate) materials. The second group are the so-called dentine bonding agents developed for use with composite resin systems.

It is important to recognize that in order to develop an adhesive bond between two substances they have to be brought into intimate contact. We need close encounters of the right kind. The bond energy involved will be dependent upon the type of interaction taking place. For true chemical bonds (ionic, co-valent or metallic) the energy may be of the order of 300 KJ mol^{-1} , while for hydrogen bonds it would be 24 KJ mol^{-1} , for Vander Walls forces and hydrophobic interactions it would be 8 and 4 KJ mol^{-1} respectively. The considerable advantage of primary chemical bonding can be clearly perceived from the comparison of these energy values. However, the important comparison perhaps should relate to how close we need to bring the surfaces together for a chemical bond to exist. The effective distance for chemical bonds is of the order of 0.15 nm, while for hydrogen bonds it will range from 0.25 to 0.3 nm and for Vander Walls forces 0.35 to 0.5 nm while for hydrophobic bonds it can be between 0.4 and 0.8 nm.

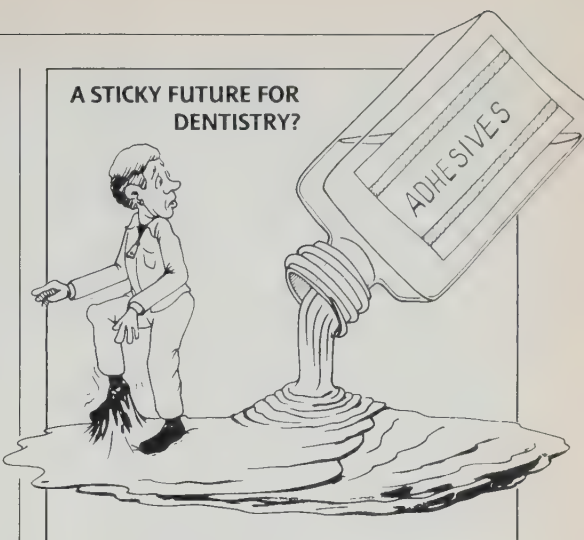
It is clearly more difficult to achieve a true chemical bond to natural tissue than to obtain a hydrophobic bond. Our hope would be that polar bonds formed initially could be slowly converted to stronger ionic or chelate bonds over a period of time. In dentistry we recognize that polar substances such as polysaccharides (plaque) poly-acrylic acid, dentine (collagen) and enamel (apatite) play a significant role in adhesion to tooth. The poly-acrylic-acid (P.A.A.) is a long chain linear polyelectrolyte with a multiplicity of polar groups. While the polyelectrolyte cements (zinc polycarboxylate and glass polyalkenoate) are considered to develop a true chemical bond with time, the mechanism of the action of the newer dentine bonding agents is poorly understood. Perhaps the most convincing hypothesis at

the moment is that put forward by Dr. Bill Douglas of the University of Minnesota who believes that the bond is largely a mechanical entanglement with intact exposed collagen fibres. Douglas believes that calcium hydroxyapatite crystallites in the smear layer of dentine are dissolved by the bonding agent leaving intact collagen fibres exposed. The presence of low molecular weight monomers and alcohol in the bonding material provides for good wetting of the collagen by the resin system. Clearly dentine bonding is a much more elusive goal than enamel bonding. It is generally accepted that dentine bonding agents achieve approximately 25 to 30 per cent of the acid etched enamel (mechanical) bond strength.

The role of the relatively weak organic collagen phase will limit the strength of the bond to dentine. Dr. Bowen of the National Bureau of Standards has been working for several years on a multistep technique for dentine bonding using mordant cations. Bowen's eight working step technique is said to achieve strength values as high as composite bonded to acid etched enamel. However, the major problem with laboratory data on all of the dentine bonding systems is the wide scatter in the bond strength results which are obtained. Controversy rages as to what is the appropriate time to finish restorations which have been placed using dentine bonding agents. It is generally believed that forces generated during trimming and polishing may cause disruption of the bond. With all of the publicity given to the dentine bonding agents it is important to recognize that none of the currently available materials are capable of completely preventing micro leakage.

In the area of luting agents the utopian cement does not yet exist. Data from our own laboratory clearly shows that the zinc phosphate materials have a lower tensile strength than the zinc polycarboxylate or glass polyalkenoate materials. The zinc polycarboxylate materials are known to have a higher creep rate than the other materials. The glass polyalkenoate materials have demonstrated a vastly better resistance to erosion and solubility than the other two classes of materials and only the two polyelectrolyte cements have the capacity to chemically bond to natural tooth structure. We believe that the glass polyalkenoate system will be increasingly used as a fluoride releasing restorative and pit and fissure material in future.

We are convinced that we will have new versions of the glass polyalkenoate type of cements developed during the next few



Exciting possibilities exist for the development of new adhesive systems and materials.

years. Our ability to produce inorganic glass like materials by wet chemical methods offers considerable scope for new cement and restorative systems. The area of research into dental adhesives and cements will be one of the most active during the next five to ten years.

Dental adhesive from mytilus edulis

Research was conducted by Professor Cook at the University of Newcastle in England in the 1960s and early 1970s when he looked at naturally occurring adhesives of aquatic invertebrates such as the common mussel (*mytilus edulis*), oyster and barnacle. He worked for many years to try to determine the chemistry of the adhesive system with the hope of producing a dental cement which would set in the moist conditions of the mouth.

For the past decade Dr. Herbert Waite and colleagues at the University of Connecticut have also studied the rapid acting glue which anchors mollusks to virtually any underwater surface. Dr. Waite claims that they have now isolated and characterized the adhesive protein. The obvious advantages of such a glue are that it not only creates a strong bond in a wet, saline environment but also maintains the stability of the bond in the dry condition.

A further major advantage is that the protein is considered biologically inert. The adhesive, if successfully developed, would have a wide application in both dentistry and medicine since it has the potential for bonding to both hard and soft tissues. The primary ingredient of the ten repeating amino acids is a poly-phenolic protein which is catalyzed by an enzyme catechol oxidase which is said to produce the setting reaction. The researchers state that using mussels as a

direct source of the adhesive is not feasible even in Nova Scotia, since it would take more than three thousand mussels to produce a mere gram of adhesive. Recombinant DNA technology is however now being used by the Genex Corporation to synthesize the mussel adhesive in large quantities. The University of Connecticut has taken out a patent approval on the adhesive system. The adhesive will be marketed through Biopolymers Inc. of Farmington, Connecticut. The researchers claim that the adhesive will be available for dental feasibility studies and testing within two years.

Another potential bioactive cement material has also been developed by Drs. Chow and Brown of the Paffenbarger Research Center of the NBS. The cement is a mixture of two calcium phosphates, tetracalcium phosphate and brushite which together form hydroxyapatite. The cement is either mixed with water or a dilute acid. The strength of this cement system is not high, however it has the potential to provide remineralising of hard tissue or even the healing of cracks or early carious lesions.

A new era in ceramics

Wet chemical methods have the potential to produce a number of innovative advances in new ceramic and glass biomaterials. These future materials may be used in the form of implants, as coatings on metal implants, as direct restorative materials or as constituents of new cement formulations. The sol-gel and spray drying wet chemistry techniques which we are currently using in our laboratory to prepare glasses and crystalline ceramics provide an outstanding opportunity for breakthroughs in the form of new biomaterials for dental and medical use.

With the richly deserved attention directed to applications of castable ceramic techniques in dentistry, some of the underlying physical and chemical properties have been neglected. Fundamental data is not yet available relative to structural changes during processing. The effects of heat treatment conditions on reaction sequences remains to be explored in more detail for the tetrasilicic-glass-ceramic system (Jones et al 1987). The all ceramic bridge is a future possibility if we are able to develop tougher ceramic materials.

Concluding remarks

Social pressure from minority public opinion will play a role in the future development of new biomaterials, whether we like it or not. Activist pressure groups

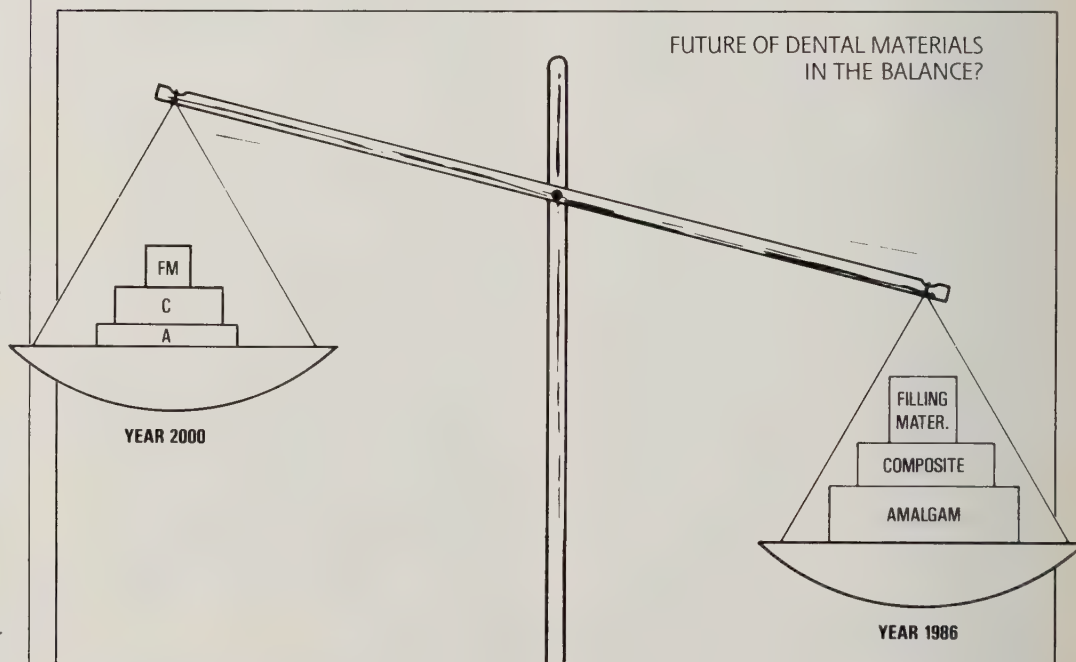
working against the use of fluoridation, or those opposing the use of mercury in amalgam restorations and others who demand the banning of experimentation involving the use of animals at a time when federal agencies and the public are also demanding proof of biocompatibility, will all tend to influence the direction and pace of the development of future biomaterials. There is clearly a need for increased information on the biocompatibility of the materials which we are placing into people's mouths and bodies. Contrary to general belief not all materials supplied by manufacturers are necessarily 'safe' to use. The term acceptable risk is often used to describe those risks which we take which are actually present, but which to date have not been demonstrated to exist by statistically valid scientific studies. Further research should be clearly conducted to eliminate the so-called acceptable risk situations such as the controversy surrounding the use of dental amalgams.

We expect chemical processing methods to have a major impact on the synthesis of new biomaterials in the form of ceramics, glass and cements. Processing and its influence on structure and properties is one of the most rapidly evolving fields of study in materials science. The dental practitioner of the future can expect to see new formulations of dental cement being developed in the next five to ten years. New generations of glass ionomer and other types of cement materials will be developed which will seriously challenge amalgam and composites as posterior restorative materials.

In the year 2000, computer-aided machining of glass-ceramic inlays may have become routine for the few still requiring restorative procedures. With the projected advances in new techniques and materials in which the clinical dentist of the future will have to become more of a chemist. Chemical solutions will be used routinely to selectively remove caries, the enamel may be remineralized by the application of further chemicals. Alternatively, a synthetic material may be bonded chemically to the tooth surface. A sound understanding of microbiology and biochemistry may be required in order to use sophisticated techniques to grow new human enamel in-vivo from recombinant DNA synthesized protein. It is certain that the requirements for dental education in biomaterials will be very different in the year 2000.

Some of the most innovative and attractive opportunities for the development of biomaterials are offered by new chemical technology methods of synthesis. Some of the most striking recent advances involve the use of recombinant DNA technology and wet chemical methods to synthesize new inorganic and organic materials. The ability to produce organic modified silicate biomaterials with mixed organic-inorganic functionality, possessing unique combinations of properties which would be unobtainable with either organic polymers or conventional ceramics, is now possible.

Controlled drug release from biomaterials in both dentistry and medicine will have to be further developed in order to routinely treat an aging dental popula-



We shall see a smaller volume and weight of restorative materials being used to replace natural tissues during the next twenty years.

tion. New concepts in the surface treatment of implant materials will change the practice of fixed and removable prosthodontics. An extensive research program is being undertaken in this area at the University of Toronto. A considerable expansion of research activities in such areas seems essential for the effective development of new improved dental and medical biomaterials and technologies.

We suggest that there is a strong need in the future for a much greater interaction between clinical dental researchers and basic scientists. Science and dentistry have always been closely linked but have yet to be completely united. The task of effecting the desired fusion between dentistry and science is not an easy one, and it may require innovative approaches to education as well as changes in the organization and role of research within our university based dental institutions. A number of vital and critical areas exist where our lack of knowledge of chemical, physical and biological properties is severely limiting our ability to improve or synthesize biomaterials having the desired properties. Improved methods of funding this type of research are urgently required.

Finally, we list seven areas to watch out for in the future developments in biomaterials.

1. Synthesis of human tooth enamel and its use as a direct restorative.
2. Synthesis of polyphenolic protein adhesives (the mussel cement).
3. Development of new bio-glass, ceramic, cement, restorative and implant materials based upon wet chemistry methods.
4. Refinement of the computer aided machining of glass-ceramic inlays.
5. Development of soft polymer biomaterials with built in plasticizers.
6. Controlled drug release from a range of biomaterials.
7. Improved surface treatments to enhance the biocompatibility of base metal implant materials.

I am pleased to say that the Division of Dental Biomaterials Science at Dalhousie University is currently involved in four of these seven future areas in the development of biomaterials.

In conclusion to this futuristic look at biomaterials, let us consider a quote from Sir Isaac Newton; "If I have been able to see further than others, it was because I stood on the shoulders of giants". Δ

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Oral health status and **TREATMENT NEEDS OF ELDERLY PATIENTS** in a teaching hospital in Saskatchewan

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ABSTRACT

The oral health status and treatment needs of 51 elderly patients were investigated in the Geriatric Assessment Unit of the University Hospital, Saskatoon. All subjects were examined clinically and radiographically. Fifty-five per cent of the patients were totally edentulous and the rest were partially edentulous. The mean number of remaining teeth in the 23 dentate persons was 14.1. Eighty-seven per cent of these individuals had at least one radiographically identifiable carious tooth and all had radiographic evidence of alveolar bone loss. The overall dental/oral health status was poor. The need for prosthetic treatment, conservative periodontal therapy and restorative dentistry was high. A standardized dental examination incorporated into hospital admission procedures might shed more light on the treatment needs of elderly patients.

SOMMAIRE

À l'Hôpital de l'Université de Saskatoon, le Geriatric Assessment Unit a fait une étude touchant l'état de santé buccale de 51 patients âgés et les traitements dont ils avaient besoin. Tous ont subi des examens cliniques et radiographiques. Parmi

eux, 55 pour cent n'avaient plus aucune dent et les autres (23) étaient partiellement édentés, ayant en moyenne 14.1 dents. Chez ces patients partiellement édentés, 87 pour cent avaient au moins une carie décelable par radiographie et, chez tous, les radiographies montraient des pertes au niveau des os alvéolaires. En général, l'état de santé bucco-dentaire de tous était pauvre. Tous avaient grand besoin de traitements prothétiques, de soins parodontaux conservateurs et de restaurations. Un examen dentaire normalisé intégré aux procédures d'admission de l'hôpital jetterait sans doute plus de lumière sur les traitements dont peuvent avoir besoin les patients âgés.

There is substantial evidence to indicate that elderly individuals have numerous dental and oral problems.¹⁻⁶ Therefore, the treatment needs can be expected to be extensive. Despite growing interest in geriatric dentistry, very little information is available concerning the oral health status and treatment needs of the elderly in Saskatchewan. Consequently, dental practitioners in this province may not be aware of the dental and oral problems which exist in older individuals. A clinical and radiographic survey was therefore undertaken to survey

the oral health and identify treatment needs of elderly patients in the Geriatric Assessment Unit (GAU) of the University Hospital, Saskatoon, Saskatchewan.

Materials and methods

All patients 65 years of age and older seen on a regular basis at the Day Hospital of the GAU and those who were inpatients in the GAU except for individuals who were very ill and had a poor medical prognosis, were interviewed by one examiner. Out of a total of 55 subjects interviewed, 51 agreed to participate in signing a consent form approved by the ethics committee of the hospital.

The clinical and radiographic examinations were carried out at the College of Dentistry, University of Saskatchewan. All clinical examinations were performed by the same examiner and the following parameters were assessed: age, sex, number of remaining natural teeth, and the presence of dentures, caries, periodontal disease and oral mucosal lesions. Clinical probing depths in relation to the mesial, distal, buccal and lingual surfaces and loss of attachment in relation to the proximal surfaces were recorded directly in millimeters (mm.) using a Williams probe with a tip diameter of 0.5 mm. Bleeding on probing and calculus were recorded as present or absent. Carious

lesions, including cervical caries, were detected using a standardized explorer. Dentures were classified as "good" (no treatment needed), "relining needed" or "new denture(s), needed." The degree of alveolar ridge atrophy was clinically evaluated and distinguished as atrophy present or absent. Oral mucosal lesions were classified according to the World Health Organization's Application of the International Classification of Diseases to Dentistry and Stomatology ICD-DA Geneva 1973.⁷

Following the clinical examination, a radiographic examination was performed. A panoramic radiograph was taken for each patient. Periapical radiographs were taken of all clinically erupted remaining natural teeth and of any areas of suspected abnormality (based on the clinical examination and the panoramic film); posterior bitewing projections were taken of patients who had a sufficient number of remaining posterior teeth to warrant it. The following radiographic parameters were assessed: the presence of periodontal bony defects, the degree of horizontal periodontal bone loss (using the method of Schei et al.⁸), dental caries, periapical lesions, root remnants, impacted teeth, and other radiographic lesions (including cysts, tumours, etc.). The radiographs were taken and interpreted by one examiner.

A questionnaire was used to assess: (a) the oral hygiene practices of the dentate subjects, (b) the past and current utilization of dental services by all subjects, (c) the subjects' perception of their dental/oral health, (d) the edentulous subjects' degree of satisfaction with their dentures, and (e) the financial status of the subjects.

Results

Clinical Investigation

Fifty-one persons were examined (49 per cent males, 51 per cent females, median age 79 years, range 67-96 years). Twenty-eight patients were completely edentulous (55 per cent); 23 were partially edentulous. The mean number of teeth in the 23 dentate individuals was 14.1. More teeth remained in the mandible (61.9 per cent) than in the maxilla (38.1 per cent). Table I illustrates the oral health and denture status. Seventy-seven per cent of gingival surfaces exhibited bleeding on gentle probing, indicating chronic gingivitis, and nearly 44 per cent of the interproximal sites were periodontally involved as evidenced by loss of attachment ≥ 3 mm. Nearly one-third (31 per cent) of all dentures examined were either unstable and/or demonstrated poor retention.

Eleven individuals (21.6 per cent) showed evidence of oral mucosal lesions,

the majority comprised of discrete small ulcers probably denture related. Other mucosal lesions included angular cheilitis (2 per cent), geographic tongue (2 per cent), and inflammatory papillary hyperplasia (4 per cent). None of these lesions seemed to warrant immediate attention.

Radiographic Investigation

Radiographic abnormalities associated with clinically erupted teeth are shown in Table II. The prevalence of periodontal bone loss in the dentate patients was high. Most remaining teeth (95.4 per cent) were estimated to have lost only 50 per cent or less of their original alveolar bone support; 3.4 per cent of remaining teeth demonstrated loss of more than 50 per cent. The percentage of remaining posterior teeth with radiographically detectable furcation involvement was 23.6 per cent. All of the dentate patients had radiographic evidence of periodontal bone loss on at least one tooth. Periapical rarefying osteitis was observed in almost 6 per cent of teeth. Of all dentate patients, 20 (87 per cent) had at least one radiographically identifiable carious tooth and 16 (70 per cent) had at least one periapical inflammatory lesion. Other radiographic abnormalities not related to clinically erupted teeth are shown in Table III. Two of the dentate individuals had a cystic lesion in the mandible of which they were previously unaware; the preliminary radiographic diagnoses for these lesions were, respectively, primordial cyst and dentigerous cyst. Since both of these patients refused surgical consultation, a definitive histologic diagnosis could not be obtained. A number of abnormalities of which the patients were not aware were discovered in the 28 edentulous subjects; seven root remnants, one antral floor discontinuity (assumedly caused by trauma during tooth extraction), and two impacted teeth were seen. In addition, three of these patients had evidence of soft tissue masses in the maxillary sinuses which were suggestive of chronic sinusitis or mucositis.

Interview

Fifty-eight per cent of the subjects had not seen a dentist for more than five years. Seventy-one per cent had not seen a dentist regularly in the past; the most commonly given reason was simply that they felt "it was not necessary". Inaccessibility to a dentist, lack of finances, and fear were also cited as reasons.

Nearly all of the dentate individuals claimed to brush their teeth at least once a day, but only 22 per cent flossed their

TABLE I
Oral and dental health status among 51 elderly patients

	n	%
Dentition		
Edentulous patients	28	55
Dentate patients	23	45
Teeth		
Maxillary	124	38
Mandibular	202	62
Total	326	—
Teeth with:		
Caries	87	27
Probing depths ≥ 4 mm.	55	17
Loss of attachment ≥ 3 mm.	142	43.5
Calculus	215	66
Bleeding on probing	251	77
Dentures		
Patients with dentures	40	78.4
Totally edentulous without dentures	1	2
Partially edentulous without dentures	10	20
Dentures with unsatisfactory stability and/or poor retention	34	31*
Oral mucosal lesions:		
Ulcers	7	—
Angular cheilosis	1	—
Inflammatory papillary hyperplasia	2	—
Geographic tongue	1	—

* % of total no. of dentures

teeth, albeit irregularly. Forty individuals with dentures were asked about their denture-related problems. Approximately 13 per cent had difficulty in chewing certain foods while 20 per cent said their lower dentures were loose. Eight per cent complained of sore spots in the mouth.

In spite of the numerous dental problems seen clinically and radiographically, 65 per cent of the dentate patients felt their teeth and gums were in good condition. Forty-eight per cent of those examined reported a monthly income of less than \$500.00 a month.

Treatment Needs

The treatment needs were based on the clinical and radiological examinations. The periodontal condition of the 23 subjects with remaining natural teeth varied from chronic gingivitis to advanced periodontitis. However, the majority required conservative periodontal therapy (oral hygiene instructions, motivation, scaling and root planing). Considering the age and medical status of the subjects, periodontal surgery was not planned for any of the patients. Extraction was the treatment of choice for teeth with advanced bone loss. Restorative dentistry was required on at least one tooth in 87 per cent of dentate individuals. Minor oral surgery including extractions and dentoalveolar surgery was indicated in 16 (31 per cent). Prosthetic treatment was needed in 23 of the 28 totally edentulous patients and was mainly related to the lower dentures. Relining was considered sufficient as the majority of these patients had advanced mandibular ridge atrophy and providing new lower dentures would not have significantly benefited the patient.

Discussion

Results of studies similar to the present investigation and using the same diagnostic criteria are not available in the Canadian dental literature. Hence it is difficult to compare the present results with existing data on Canadian geriatric populations. Although the sample in this study cannot be assumed to represent the elderly population in Saskatchewan, the findings may give a valid indication of the oral health status of the elderly.

The prevalence of edentulism in the present sample is comparable to situations in other provinces in Canada^{3,9} though Leake and Martinello² and Simard et al.⁵ reported relatively higher prevalence of 74 per cent in London (Ontario) and 72 per cent in Quebec, respectively.

The need for prosthetic treatment (82 per cent), conservative periodontal

therapy, and restorative dentistry was high in this study. Brauer et al.⁶ noted similar results after examining 50 patients in a Danish hospital. Studies involving larger samples, although using different diagnostic criteria,^{2,5,10,11} agree with our findings. In a recent study of the periodontal status of adults in Saskatoon,¹² 72 per cent of persons 45 years of age and over had periodontitis characterized by loss of attachment of ≥ 3 mm. on at least one tooth, and a significant increase of loss of attachment with age was noted. Similar results were obtained in the present investigation, with nearly 44 per cent of teeth demonstrating loss of attachment ≥ 3 mm. on at least one interproximal surface. A loss of attachment of 3 mm. or more was used to designate surfaces with a definite loss of supporting tissue since this value exceeds the error of measurement of the assessment procedure.¹³ Hunt,¹⁴ examining the periodontal needs of 477 dentate persons in Iowa, U.S.A., reported that 90 per cent needed periodontal treatment of some type. Similarly, the need for oral hygiene instructions, scaling or root planing was high in the present group. Although most of the subjects claimed to brush their teeth at least once a day, the number of teeth with bleeding on gentle probing was large (77 per cent). One explanation may be that elderly people are not aware of the inadequacy of their brushing technique,¹⁵ coupled with the fact that the majority had never used dental floss.

The results of the radiographic investigations confirm the existence of numerous hidden or asymptomatic problems in the jaws of the patients studied. The large percentage of teeth with 50 per cent

or less marginal bone loss is similar to the results of Palmqvist and Sjodin¹⁶ in a study of a geriatric Swedish population. The percentages of total patients with at least one carious tooth, evidence of periodontal bone loss, and at least one impacted tooth were similar in this study to the one performed by Brauer et al.⁶ However, the present study found a much higher percentage of patients with at least one periapical inflammatory lesion (31 per cent compared to 16 per cent) and at least one root remnant (25 per cent compared to 4 per cent). A more meaningful indication of the relative ubiquity of dental problems seen radiographically in this study group is the very high percentage of dentate patients having at least one radiographically identifiable carious tooth or periapical inflammatory lesion, or evidence of periodontal bone loss. There was evidence of impacted teeth, root remnants and other abnormalities even in clinically edentulous subjects. All of the edentulous

TABLE III

Other radiographic abnormalities

Radiographic abnormality	Number
Root remnants	21
Periapical lesions associated with root remnants	8
Impacted teeth	5
Cysts	2
Maxillary sinusitis/mucositis	4
Antral floor discontinuity	1

TABLE II

Radiographic abnormalities associated with clinically erupted teeth (Total number of clinically erupted teeth in 23 partially dentulous patients = 326)

Abnormality	No. of teeth involved	Percentage of all teeth involved
Carious teeth	92	28.2
Marginal bone loss:		
a) none or negligible	4	1.2
b) $\leq 50\%$	311	95.4
c) $\geq 50\%$	11	3.4
Periodontal bony defects:		
a) vertical bone loss	17	5.2
b) inconsistent margins (reverse architecture)	13	4.0
c) furcation involvements	29	8.9
Periapical lesions	19	5.8

individuals claimed to be unaware of the existence of such abnormalities; this may be the result of less frequent radiographic examinations in past decades compared to the present.

The 1978-79 Canada Health Survey determined that 77 per cent of persons over 65 years of age had not seen a dentist during the preceding year and of this 77 per cent, 67 per cent had not seen a dentist for the past five years.¹⁷ More than half of the present group indicated not being to a dentist for five years or more, and the majority indicated they visited the dentist only when a problem arose. In spite of the prevalence of disease present in the mouths of the dentate subjects, the majority believed their teeth and gums to be in good condition. This lack of recognition of perception of need for care by the aged is one of the most identified explanations for failure to seek care.¹⁸

Almost half of the group reported a monthly income of less than \$500.00. In the absence of a publicly funded dental plan, it is therefore unlikely that many of these people would be able to afford the dental treatment needed, even if they were aware of any existing problems.

In conclusion, the overall oral health status in this sample of elderly patients was poor, and there were numerous radiographically evident abnormalities of which the subjects were unaware. A substantial part of the treatment needs was comprised of conservative periodontal therapy, prosthetic treatment (denture relines), and restoration of carious teeth. Although the small numbers in the present study preclude any meaningful age-specific analysis of the different types of dental/oral diseases, the data suggest a pattern similar to results from studies performed elsewhere, using clinical parameters only. Although the objective dental needs were high, the demand for dental services was low, indicating that older persons need to be better informed and educated in dentally related matters. However, consideration must be given to the general health status since this might preclude the use of existing dental services. In addition, the low income of many elderly individuals would probably prevent them from seeking dental treatment, regardless of their understanding of their own oral/dental health. A standardized dental examination, if incorporated into hospital admission procedures as advocated by McPhail et al.,¹ would better estimate the dental needs of geriatric patients and also provide information regarding their medical and oral health status.

We wish to thank Ms. F. Quail, M. Kohlhammer, and all other members of the nursing staff, GAU, University Hospital, Saskatoon, and the participants for their kind cooperation. The assistance of Professor David Singer is also gratefully acknowledged.

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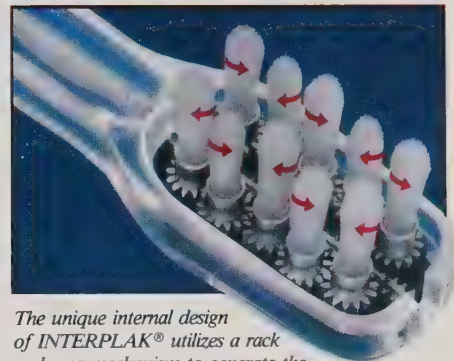
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Comparison of dental caries and oral hygiene indices FOR 13-14 YEAR OLD QUEBEC CHILDREN between 1977 and 1984

Martin Payette, DDS
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ABSTRACT

A comparison of the principal dental health indices of 13-14-year-old Quebec school children between 1977 and 1984 is reported. The data derives from Stamm et al.¹ Dental Health Survey of Quebec School children in 1977 and from a province wide probability sample of 1201 children in 1984. The most interesting conclusions are: a 33 per cent decline in dental caries prevalence; a 50 per cent increase in treatment level; a 40 per cent reduction in treatment need; a five-fold reduction in tooth mortality rate; significant differences in the DMFT index between ethnic groups and residential status no longer exist; a slight improvement in the oral hygiene condition. Water fluoridation is still associated with significantly lower dental decay.

SOMMAIRE

Cet article compare les principaux indicateurs de la santé dentaire des enfants de 13-14 ans entre 1977 et 1984. Les données proviennent de l'enquête de Stamm et al. réalisée en 1977 chez 1093 étudiants âgés de 13 et 14 ans et celles de l'Enquête Santé Dentaire Québec en 1984 chez 1201 étudiants du même âge. En voici les principaux points: la moyenne CAOD par enfant a diminué de 9.0 à 6.0; le niveau de traitement par obturation s'est amélioré, passant de 26 pour cent à 76 pour cent; le besoin de traitements de la carie a chuté de 55 à 17 pour cent; la moyenne de dents permanentes extraites est passée de 1.6 à 0.32; les différences significatives observées en 1977 en

regard de la prévalence de la carie selon l'ethnie et le statut de résidence sont disparues en 1984; en 1977 comme en 1984, l'expérience de la carie est associée à la fluoruration de l'eau de consommation.

Introduction

The Quebec Government introduced a Community Health system in 1973. One of the objectives was to implement a dental preventive program for Quebec children. At the same time, the province inaugurated a curative and individual preventive dental service program in the private sector. During the following years dental epidemiological studies were conducted by some of the 32 Quebec Community Health Departments (DSC — Département de Santé Communautaire) to ascertain the dental health of Quebec children. Unfortunately, all of these surveys were limited to small geographic regions of Quebec and did not employ a standardized and uniform survey protocol.

In 1977, a Dental Health Survey of Quebec school children aged 6-7 and 13-14 years which employed a representative sample and standardized indices for measuring dental caries and periodontal disease was undertaken by Stamm, Dixter and Langlais.¹ The following year Infante-Rivard and Payette² began a longitudinal study of the dental health condition of primary level school children in the city of Montreal using accepted epidemiologic methodology. This study is particularly interesting insofar as it investigates the association between dental problems and a large number of risk factors. The Quebec Com-

munity Health Department Directors Association and the Ministry of Social Affairs undertook a Dental Health Survey of Quebec children aged 7-8, 11-12 and 13-14, during the 1983-1984 school year. A system of standard epidemiological techniques was used to ensure that dental disease data from the 12 regions and the 32 DSC of Quebec could be legitimately compared. To further ensure data comparability, the examiners were carefully calibrated to common diagnostic criteria and examination standards.

This paper presents selected findings from the 1984 Dental Health Survey and compares the results of the surveys conducted in 1977 and 1984 for 13-14 year old Quebec school children.

Methods and materials

The complete methodology of this 1984 survey is described in two reports^{3,4} and one prior publication.⁵ To summarize, the sampling frame consisted of three levels of stratification where the Province of Quebec was divided at first in two homogeneous regions using metropolitan-urban-rural residence and socio-economic characteristics. Following this stratification, three or four (depending on the region) Community Health Departments (DSC) were randomly selected, taking into account the respective weight of each DSC in the region. In each selected DSC a weighted and random selection of six schools (in region A) and 11 schools (in region B) was pursued. In each school, 20 children were selected at random and examined.

Clinical examinations were carried out

TABLE I

**Selected and examined sample for 13-14 year old Quebec children
Public school sector
Quebec dental health survey 1983-1984**

Region DSC (a)	Selected Sample	Examined Sample
Region A	360	341
DSC Verdun	120	108
DSC Cartierville	120	115
DSC Sherbrooke	120	118
Region B	880	860
DSC Gaspé	220	205
DSC Rouyn-Noranda	220	203
DSC Rivière-du-Loup	220	220
DSC Joliette	220	232
Quebec	1240	1201

(a) DSC = Département de Santé Communautaire (Community Health Department)

TABLE II

**Descriptive characteristics of the 13 and 14 year old Quebec
children sample
Quebec dental health survey 1983-1984
High schools grade 2 (13-14 year old)**

Number of children examined:		1201
Sex	Female	53.3%
	Male	46.7%
Language spoken at home	French	86.7%
	English	8.0%
	Other	5.3%
Ethnic origin of father	French	85.4%
	English	6.3%
	Other	8.3%
Race	White	97.7%
	Black	0.9%
	Other	1.3% (a)

(a) Rounding error

TABLE III

**Sample precision and 95% confidence limits for DMFT by age
Quebec dental health survey 1983-1984**

Age	DMFT	(SD)	Sample imprecision		95% confidence limits
			Value of DMFT	Percent of DMFT	
13	5.62	(4.13)	± 0.34	± 6.1%	5.27 < 5.62 < 5.96
14	6.30	(4.39)	± 0.34	± 5.4%	5.95 < 6.30 < 6.64
13 and 14	6.01	(4.28)	± 0.24	± 4.0%	5.75 < 6.00 < 6.24

(SD) = Standard deviation

by seven dentists of the dental public sector. Prior to the field exams a three stage nine-day formation exercise took place and the examiners were calibrated to standard procedures. An additional four-day calibration session was held on the Grainger Orthodontic Treatment Priority Index (TPI) and on particular deviation measurements included in this index. To collect the data needed to evaluate the intra-examiner consistency, 10 per cent of the children were reexamined by each examiner.

The clinical assessment was accomplished using standardized procedures and equipment. The following clinical data were recorded on a standard computerized form: Oral Hygiene Index (simplified);⁶ total amount of permanent teeth; decayed, missing and filled teeth (DMFT) and surfaces (DMFS) indices;^{7,8} Grainger Orthodontic Treatment Priority Index (TPI)⁹ and a variety of occlusion deviations; orthodontic appliances; Russell's Periodontal Index (simplified);¹⁰ some other dental conditions and all the ordinary socio-demographic data. These data were treated at the Computer Treatment Centre of the University of Montreal using primarily the Statistical Package for Social Sciences (SPSS). The principal statistical tests were done by the student T: the variance analysis (ANOVA) and the covariance analysis (ANCOVA).

Results

The inter-examiner consistency attained at the end of the calibration period on the caries indices by all examiners was a 94.9 per cent to 95.8 per cent agreement. On an individual basis the Kappa statistics^{11,12,13} fluctuated between 0.89 and 0.97 for sound surfaces; 0.71 and 0.93 for decayed surfaces; 0.65 to 1.0 for extracted surfaces; 0.79 to 0.98 for filled surfaces and 0.81 and 0.95 for DMF surfaces. On the Grainger Orthodontic Treatment Priority Index, the consistency was a 0.80 intraclass correlation coefficient¹⁴ for the group of examiners and an intraclass coefficient fluctuating between 0.78 and 0.97 for the individual examiners (a + 0.75 intraclass correlation coefficient has been suggested as an acceptable consistency level by Burdock and al.)¹⁵

The intra-examiner consistency on the indices of decay measurement has proven to be extremely adequate and a level of intra accord fluctuating between 97.9 per cent and 99.8 per cent for the individual examiners has been found.

Table 1 describes the distribution of the 13 to 14-year-old children examined in 1983-1984 by region and DSC.

The obtained sample was close to the expected sample size in each region and DSC and this stratification reflected the respective contribution of those zones in the Quebec total. A sample group of 1,240 children was chosen, of which 1,201 were examined. The non bias estimate of the variable was weighed using the standard formulas applying to stratified sample by degrees.

Table 2 shows the sample's sex and cultural background characteristics. The distribution pattern is well in accord with the overall structure of the Quebec population on these characteristics.

Table 3 details the precision of the sample and the 95 per cent confidence limit. The precision is adequate, fluctuating between ± 4 per cent and ± 6.1 per cent of the DMFT index or a ± 0.24 to ± 0.34 variation around the mean of the sample.

The dental caries prevalence for 13-14 year old school children in 1977 and 1984 is presented in **Table 4**. The data indicate a 33 per cent decline at those ages and this decline is statistically significant. For example, at 13 and

14 years old, the DMFT was 9.0 in 1977 and 6.0 in 1984 ($p < 0.001$). Girls of 13 years have a more pronounced decline than boys but at age 14 we find the opposite. This difference between sexes is statistically significant at age 14.

This table illustrates the positive variation of the DMFT components in Quebec during this period. The dental caries decline in Quebec is accompanied by a spectacular improvement of the treatment level and an encouraging lowering of the dental mortality in the permanent dentition. In 1977 girls received more treatment than boys. This tendency still existed in 1984 and although the level of improvement of the F (filled) component is proportionally equal in boys and girls, the girls have maintained a statistically significant differential from the boys.

In **Tables 5, 6 and 7** the data on dental caries are presented in a way that shows the relationship of a number of independent variables with DMFT scores and their components. In 1977, francophone children had a significantly higher mean dental caries prevalence than anglo-

phones or allophones and also had more teeth to be treated, a high dental mortality rate and fewer filled teeth than anglophones. These differences are not present in 1984. The DMFT scores approach significance ($p=0.03$) and it is not francophones but allophones who are now experiencing the higher dental caries prevalence.

The relationship between residential status and the DMFT index and its components is illustrated in **Table 6**. The 1977 adjusted data confirm the "a priori" hypothesis that dental caries prevalence of children living in rural areas is significantly higher than that of children living in metropolitan or urban areas. Also, it reaffirms that treatment needs and dental mortality are higher and treatment levels are inferior in rural zones.

The adjusted mean DMFT scores in 1984 do not show a significant difference by residential status. Children in rural and metropolitan areas have approximately the same number of teeth in need of treatment but those needs are considerably lower than in 1977. School children of

TABLE IV

Dental caries experience in the permanent dentition for 13 and 14 year old Quebec school children, 1977 and 1984, by age and sex

Age	Sex	Survey	N(a)	Mean number per child					(SD)	Difference between the 1977-84 DMFT's
				Teeth present	D	M	F	DMFT		
13	F + M	Quebec	496	25.3	4.9	1.4	2.2	8.5		
	F	Stamm	258	25.3	4.9	1.6	2.5	8.9		***
	M	1977	238	25.2	4.9	1.2	1.9	8.0		
13	F + M	Quebec	551	26.7	0.94	0.22	4.45	5.62(b)	(4.13)	-33.8%
	F	E.S.D.Q.	307	26.7	0.88	0.22	4.45	5.55(b)	(3.80)	-37.6%
	M	1984	242	26.6	1.03	0.23	4.45	5.71(b)	(4.53)	-28.6%
14	F + M	Quebec	597	25.6	5.1	1.7	2.5	9.4		
	F	Stamm	330	25.7	5.0	1.6	3.0	9.7		***
	M	1977	267	25.4	5.3	1.8	2.0	9.3		
14	F + M	Quebec	622	26.8	1.18	0.39	4.72	6.30(b)	(4.39)	-32.9%
	F	E.S.D.Q.	319	26.7	1.08	0.46	5.42	6.98(b)	(4.32)	-28.0%
	M	1984	303	26.9	1.29	0.31*	3.98**	5.59(b)**	(4.36)	-39.8%
13 and 14	F + M	Quebec	1093	25.4	5.0	1.6	2.4	9.0		
	F	Stamm	588	25.6	5.0	1.6	2.8	9.3		***
	M	1977	505	25.3	5.1	1.5	1.9	8.6		
13 and 14(c)	F + M	Quebec	1201	26.7	1.07	0.32	4.60	6.00(b)	(4.28)	-33.3%
	F	E.S.D.Q.	640	26.7	0.98	0.34	4.93	6.26(b)	(4.12)	-32.6%
	M	1984	560	26.8	1.17	0.29	4.24**	5.72(b)*	(4.44)	-33.4%

* = $p < .05$, significant difference between sexes.

** = $p < .001$, significant difference between sexes.

*** = All differences, between 1977 and 1984 are significant ($p < .001$) except the difference between the number of teeth present.

(a) = The numbers are pondered and there also exist rounding errors.

(b) = Rounding errors.

(c) = 28 subjects being a few months younger than 13 years or older than 14 years were included in the 13 and 14 year old category (High school grade 2).

(SD) = Standard deviation.

rural areas still have more extracted teeth and fewer restored teeth than those living in urban areas.

The 1977 and 1984 surveys were not designed to evaluate the effect on dental caries of being born and raised in a fluoridated community. Nevertheless, in both studies, it was decided to compare children living in fluoridated and non-fluoridated centres. Those data and their comparisons are found in Table 7. In spite of the lack of information on residential history, children living in fluoridated communities had significantly less dental decay than their counterparts living in non-fluoridated zones.

In Table 8 the caries data by socio-economic status (SES) shows that in 1977 in Quebec, the family SES had a profound association with the child's dental caries scores. An accurate compar-

ison between the 1977 and 1984 caries scores by SES is not easily feasible because the Blishen Scale, which is an occupational class scale, could not be used in 1984. Instead, children were classified according to CLSC (Local Centre of Community Services) mean family income categories. We observe that in 1984 there was no significant difference between the mean caries scores found in the different SES groups.

The treatment level of dental caries is usually evaluated by the F/DMFT ratio which represents the proportion of an individual's teeth with caries experience that have received treatment in the form of fillings. Conversely, the treatment needs for dental caries are usually illustrated by the D/DMFT ratio and the dental mortality level by the M/DMFT ratio.

Table 9 details, using the Hunt and al.

procedure, which gives the proportion of the total DMF teeth filled, decayed or extracted in the sample, the evolution of the treatment level, the dental mortality level and the treatment need in the 13-14 year old Quebec school children between 1977 and 1984. The improvement is spectacular in the treatment level which increases from 26 per cent to 76 per cent. The treatment need, on the other end, experiences an inverse evolution declining from a 55 per cent score to a 17 per cent score. As for the permanent dental mortality rate, it decreases from 17 per cent to 5 per cent.

Table 10 presents the improvement of the level of treatment between 1977-1984 according to residential status. In 1977, the difference between the adjusted means was statistically significant ($p < 0.01$). In 1984, the difference

TABLE V

Dental caries experience by ethnic group for 13 and 14 year old Quebec school children, 1977 and 1984

Ethnic group	N(c)	1977 Adjusted means (a)(b)				N	1984 Adjusted means (a)(b)			
		D	M	F	DMFT		D	M	F	DMFT
Francophone	819	5.3	1.7	2.4	9.4	1041	1.05	0.33	4.56	5.95(d)
Anglophone	105	3.1	0.5	3.1	6.7	96	1.04	0.20	4.33	5.58(d)
Allophone	76	3.9	0.7	1.6	6.1(d)	64	1.41	0.29	5.85	7.57(d)
Total	1000	5.0	1.5	2.4	8.9	1201	1.07	0.32	4.61	6.01(d)

(a) DMFT and component scores adjusted for residence status, SES, examiner bias and dentist: population ratio.
 (b) Difference among adjusted means significant for DMFT and its three components, $p < 0.01$.
 (c) Sample size reduced from 1093 because of missing SES data.
 (d) Rounding error.

(a) DMFT and component scores adjusted for residence status, sex, race and mean family income by CLSC (Local Centre for Community Services).
 (b) Difference among adjusted means not significant for D, M, F components and marginally significant for DMFT ($p = 0.03$).
 (d) Rounding errors.

TABLE VI

Dental caries experience by residence status for 13 and 14 year old Quebec school children, 1977 and 1984

Residence	N(c)	1977 Adjusted means (a)(b)				N	1984 Adjusted means (a)(b)			
		D	M	F	DMFT		D	M	F	DMFT
Metropolitan	371	4.3	1.2	2.6	8.1	278	1.24	0.23	4.70	6.19(e)
Urban	352	5.0	1.4	2.8	9.2	450	0.69	0.15	4.99	5.84(e)
Rural (d)	277	5.8	2.0	1.8	9.6	474	1.33	0.53	4.20	6.07(e)
Total	1000(c)	5.0	1.5	2.4	8.9	1201	1.07	0.32	4.61	6.01(e)

(a) DMFT and component scores adjusted for cultural influence, SES, examiner bias and dentist: population ratio.
 (b) Difference among adjusted means significant for DMFT and its three components, $p < 0.01$.
 (c) Sample size reduced from 1093 because of missing SES data.

(a) DMFT and component scores adjusted for sex, cultural influence, race and mean family income by CLSC (Local Centre for Community Services).
 (b) Difference among adjusted means significant for D ($p < .001$), M ($p < .001$), F ($p < 0.01$) components but not for DMFT ($p = 0.56$).
 (d) In 1984, the "rural" category included semi-urban and rural groups.
 (e) Rounding errors.

remains between the rural and the two urbanized groups ($p < 0.001$) but the different level of improvement in treatment during the last years has changed the relative position of the group. The rural group continues to have the lower level of treatment but has closed the gap with the metropolitan group. The urban

population emerges as the group with the better level of treatment.

The data pertaining to the evolution of the treatment level in ethnic groups, are presented in Table 11. An interesting change has occurred in Quebec between 1977-1984. The statistically significant difference between the level of treatment

observed in 1977 in favor of the anglo-phone group has dissolved, because the improvement was greater in the franco-phone and allophone groups. In fact, all groups now experience a similar level of treatment of about 77 per cent.

Tables 12 and 13, present the data relevant to the two components of the OHI(S) index found in the 1977 and 1984 children population. Several interesting findings emerge. Firstly, in both surveys, the percentage of debris free children is very low (14 per cent in 1977 and 19 per cent in 1984). Secondly, as expected, females have cleaner teeth than males in both surveys. Thirdly, the percentage of children without dental calculus is relatively high and almost identical in both surveys (62 per cent and 61 per cent) and a significant quantity of calculus was found only in a very small group of children. Fourthly, a higher percentage of children were distributed in the 1.50 to 3.0 debris categories (poor hygiene condition) in 1977 than in 1984. Finally, the mean debris and OHI(S) scores are lower in 1984 and the mean calculus scores almost identical. These differences may suggest an improvement in the oral hygiene condition of the 1984 children.

Discussion

The most noteworthy findings emerging from the 1977 Dental Health Quebec school children survey were: the high overall caries activity; the dramatically high permanent tooth loss; the influence of living in a rural areas on both the caries rate and the caries treatment level; the cultural influence on oral hygiene, dental caries and treatment level and the impact of the socio-economic status on those same variables.

The decline in the dental caries prevalence in many industrialized countries in the last 10 to 20 years is a well documented phenomenon (16 to 29). Quebec does not seem to have diverged from this general trend, but we cannot establish with certainty the exact moment this improvement began: Quebec studies prior to the survey of Stamm and al. in 1977 and Infante-Rivard and Payette in 1978-83, were not numerous and did not always follow scientific survey protocol.

The data analyzed in this paper confirm a 33 per cent dental caries prevalence decline between 1977 and 1984 in Quebec for 13 and 14 year old children. Today in North America, a mean DMFT of 6.0 is not considered unusually high. Surveys in Saskatchewan, Prince Edward Island, Newfoundland, Nova Scotia, Manitoba, British Columbia, New Brunswick, Alberta and Ontario have placed the 13

TABLE VII

Mean DMFT experience for 13 and 14 year old Quebec children by water fluoride status of community, 1977 and 1984

Fluoride status	1977 Mean DMFT	1984 Mean DMFT	Difference between 1977 and 1984
Fluoride	6.86	4.83	- 29.5%
No fluoride	9.48	6.23	- 34.2%
Total	8.9	6.01	- 32.4%
	Difference between means (1977) signifi- cant, $p < 0.001$.	Difference between means (1984) signifi- cant, $p < 0.001$.	Difference between means of 1977 and 1984 significant, $p < 0.001$.

TABLE VIII

Mean DMFT scores by socio-economic status for 13 and 14 year old Quebec school children, 1977 and 1984

1977		1984	
Blishen scale	DMFT	Mean family income by CLSC(a)	DMFT
1	6.40	Very high	7.58
2	7.36	High	5.78
3	8.91	Medium	5.75
4	8.44	Low	6.21
5	8.96	Very low	7.10
6	9.89		
7	9.71		
ANOVA (Reg)	F = 20.4 $p < 0.001$	ANOVA (Reg)	F = 1.6 $p = 0.16$

(a) CLSC = Local Centre for Community Services

TABLE IX

Treatment level and treatment need for the 13 and 14 year old Quebec children, by age, 1977 and 1984

Age	D/DMFT %		M/DMFT %		F/DMFT %	
	1977	1984	1977	1984	1977	1984
13	57%	16%	16%	3%	25%	79%
14	54%	18%	18%	6%	26%	74%
13 and 14	55%	17%	17%	5%	26%	76%
Improvement between 1977-84 and 13 and 14 year old	- 69%		- 70%		+ 192%	

and 14 years old's DMFT scores at 6.5, 5.8, 5.8, 5.7, 5.6, 5.1, 5.0, 4.9 and 3.1 respectively.³⁰⁻³⁴ Dental caries prevalence rates in 13-14 year old children in Quebec are still much higher than those in Ontario but are now consistent with most other provinces.

The decline in dental caries in Quebec is associated, like in so many countries, with the emerging (which will be documented in other publications) of limited groups of high risk children in which a large portion of caries experience seems to be polarized as was suggested by Marthaler. At 13 and 14 years, the 18.8 per cent of children having the higher DMFS are experiencing 44.1 per cent of the overall caries experience.

The Quebec 1984 survey was not designed to determine a casual relationship between an anticipated dental caries prevalence decline and the preventive dental measures introduced by the province in 1973-1974. In the absence of any augmentation of community water fluoridation between 1977 and 1984 in Quebec (population having access to the measure remained at 8 to 9 per cent) the principal factors influencing the decline in dental caries might be speculated to be: greater use of topical fluorides (in particular, a massive use of fluoridated dentifrice), school-based weekly fluoride mouth-rinse programs, topical fluoride gel applications in the private dental offices, dental products publicity in the

media, dental health education provided by more than 250 dental hygienists employed by the public sector, increased use of sugar substitutes, a more preventive oriented approach by the private sector dental practitioner and a favourable change in public attitude concerning the importance of dental health. Many of these factors are essential components of the dental program introduced in 1974.

Compared to the international ICSDM surveys,³⁵ permanent tooth loss in Quebec was appallingly high in 1977 with the average Quebec 13 to 14 year old child having lost 1.6 teeth. Stamm¹ suggested that rapid progress could be made only if certain factors were understood. Firstly, tooth loss can be avoided not only through prevention but through conservative treatment. Tooth loss rates were high in Quebec not only because dental caries rates were high but because dental caries were treated by extraction and not restoration. Reducing dental caries rates by prevention alone could not guarantee a rapid decline in tooth loss. Secondly, a certain number of behavioral factors have an impact on tooth loss. In particular, the role model Quebec school children were observing in their parents. Thirdly, dentists were involved in every decision concerning tooth extraction.

A dental health education program aimed at promoting conservation of natural dentition and a change in the dental fee guide to reduce the economic incentive of providing extractions instead of restorations were introduced between 1977 and 1984. Not surprisingly the appallingly high tooth loss of 1.6 teeth per child in 1977 fell to a remarkably low 0.32 teeth in 1984; a spectacular 80 per cent improvement in only seven years.

The family socio-economic status in Quebec in 1977 had a profound association with the child's dental caries prevalence. This finding was not consistent with several other reports in the dental literature so Stamm suggested that a family attitude existed in the lower socio-economics groups in Quebec, putting less value on dental health. In his view, a children's dental insurance program could not, by itself, be expected to alleviate such discrepancies. In 1984, the data showed an apparent positive evolution where all the significant 1977 caries experience by SES differences seem to have dissolved. It is unfortunate that, in 1984, the Blishen scale could not be used. It cannot be known for sure if this improvement corresponds to a real change in the preventive attitude in the lower socio-economic groups or is the result of the utilization of a cruder SES

TABLE X

Treatment level (F/DMFT) by residence status for 13 and 14 year old Quebec school children, 1977 and 1984

	1977 Adjusted (a)(b)		1984 Adjusted (a)(b)		Improvement between 1977 and 1984
	N(c)	F/DMFT%	N	F/DMFT%	
Metropolitan	351	32.0%	278	75.9%	+ 57%
Urban	345	30.4%	450	85.4%	+ 64%
Rural(d)	272	18.7%	474	69.1%	+ 72%
Total	968 c	26.9%	1201	76.7%	+ 64%

(a) F/DMFT scores adjusted for cultural influence, SES, examiner and dentist: population ratio.

(b) Difference among adjusted means significant, $p < 0.01$.

(c) Sample size reduced from 1093 because of subjects not scorable and missing SES data.

(a) F/DMFT scores adjusted for cultural influence, sex, race and mean family income by CLSC (Local Centre for Community Services).

(b) Difference among adjusted means significant, $p < 0.001$.

(d) In 1984, the rural category included semi-urban and rural groups.

TABLE XI

Treatment level (F/DMFT) by ethnic group for 13 and 14 year old Quebec school children, 1977 and 1984

	1977 Adjusted (a)(b)		1984 Adjusted (a)(b)		Improvement between 1977 and 1984
	N(c)	F/DMFT%	N	F/DMFT%	
Francophone	801	25.5%	1041	76.6%	66.7%
Anglophone	101	46.2%	96	77.5%	40.3%
Allophone	66	26.2%	64	77.2%	65.8%
Total	968	26.9%	1201	76.7%	64.9%

(a) F/DMFT scores adjusted for residence status, SES, examiner bias and dentist: population ratio.

(b) Difference between adjusted means significant, $p < 0.01$.

(c) Sample size reduced from 1093 for subjects not scorable and missing SES data.

(a) F/DMFT scores adjusted for residence status, sex, race and mean family income by CLSC (Local Centre for Community Services).

(b) Difference between adjusted means not significant.

classification. The uncertainty remains.

The Quebec children's dental insurance program has produced a spectacular improvement in the treatment level of dental caries in recent years. So much so that Quebec now experiences a treatment level equivalent to that of American children of the same age and have the fourth best treatment level of the Canadian provinces. The province's control curative program has also lifted the economic and geographic barriers on treatment that existed for children living in rural areas and for francophone and allophone children regroupings. The ethnic origin no longer affects treatment level and, rural residential status, while it still continues to be related to a lower treatment level, has experienced a higher rate of improvement (72 per cent versus 64 per cent and 57 per cent).

The children's oral hygiene status was, in 1977, slightly poorer than expected compared to North American children of the same age with a debris index of 1.10 against scores of 0.81 for the 13 and 14 year old United States children (NCHS, 1975), of 0.68 for Ontario students in 1978 and 0.66 in the 1979 Alberta survey.

In 1984, the calculus index continues to be relatively low in Quebec and the debris index shows a slight improvement (0.88 versus 1.10) over the 1977 oral hygiene condition. Taking into account the importance given to dental health education in the province's preventive program in recent years in Quebec, this relatively modest improvement suggests that there is a possibility that too much emphasis was applied in the past to the transmission of knowledge in our education program and not enough on changes in attitudes and behavioral patterns. A reorientation of objectives has already taken place on this subject in recent years, which should be continued.

Conclusion

The impressive change observed in dental caries prevalence and in the quality and high treatment level of dental caries in recent years in Quebec is probably due, for a certain part, to the province's preventive and curative service programs inaugurated in 1973 and 1974. Not only is it essential to keep those gains but even more important, we should intensify the preventive efforts for certain specific age groups who are more vulnerable.

Further improvement of dental caries prevalence rates among Quebec children would depend on the introduction of programs involving community water fluori-

dation, school water fluoridation or fluoride tablet supplement distribution, the use of pit and fissure sealants and specific interventions for high risk children. Δ

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TABLE XII

Distribution of debris and calculus scores for 13 and 14 year old Quebec school children, 1977 and 1984

Debris and calculus	1977 Percent		1984 Percent	
	Debris scores n = 1093	Calculus scores n = 1093	Debris scores n = 1201	Calculus scores n = 1201
0	1.9	62.7	5.0	61.4
0.01-0.49	11.6	26.3	14.0	24.5
0.50-0.99	28.1	8.3	35.8	10.6
1.0-1.49	29.3	1.4	30.9	2.1
1.5-1.99	16.0	0.2	10.6	0.5
2.0-2.49	8.3	0.2	3.4	0.5
2.5-3.00	3.4	0.0	0.2	0.08
Not classified	1.3	1.3		
Mean score	1.10 **	0.14	0.88	0.17
Standard-error	0.01	0.007	0.01	0.008

** = Difference between means of 1977 and 1984 significant, $p < 0.01$.

TABLE XIII

Mean oral hygiene index simplified (OHIS) scores for 13 and 14 year old Quebec school children, 1977 and 1984

Variable	1977			1984		
	Males	Females	Combined	Males	Females	Combined
Debris mean score	1.23	1.00 **	1.10	1.01	0.76 *	0.88
Calculus mean score	0.16	0.12	0.14	0.20	0.13 *	0.17
OHI(S) mean score	1.39	1.12 *	1.28	1.21	0.89 *	1.05

* = $p < 0.05$ difference between sexes significant
** = $p < 0.01$ difference between sexes insignificant

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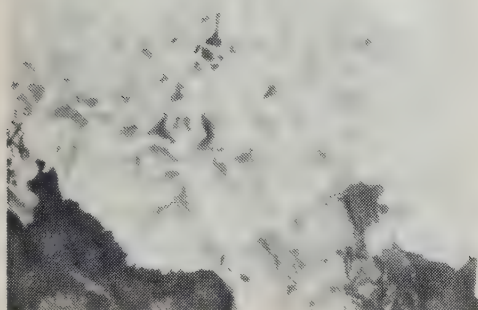
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De l'original en P.A.P.

LE CHASSIS AMORTI

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Responsable du Service de Prothèse Adjointe
Faculté d'Odontologie de LYON
Gaillard, J., DCD
CES Prothèse Adjointe Partielle
Attaché à la Faculté
Jourda, G., DCD, DSO
CES Prothèse Adjointe Partielle
Attaché à la Faculté

SOMMAIRE

Le rôle de la prothèse au cours des siècles a été lié au remplacement des dents absentes: c'est à dire surtout à un rôle esthétique. Petit à petit, les prothèses sont devenues fonctionnelles et chacun s'est ingénié à les rendre moins nocives pour les éléments supports. Néanmoins, le but poursuivi n'est resté qu'un vœu puisque dans l'esprit de la majorité des praticiens, réaliser une prothèse adjointe partielle équivaut à prévoir une prothèse adjointe totale.

ABSTRACT

For centuries, dentures have been used to replace missing teeth and their purpose was mainly esthetic. Little by little, they have become functional and many have strived to make them less harmful for the support elements. Nevertheless, the goal to be reached has remained only a wish since most practitioners believe that to build a partial adjunctive prosthesis means to provide for a full adjunctive one.

Pourquoi cet abandon? Uniquement parce que la philosophie des praticiens est plus liée aux possibilités mécaniques qu'au respect de la biologie.

Il en résulte qu'actuellement, les prothèses sont conçues et réalisées (à quelques détails près concernant la rétention, la stabilisation) telles qu'elles étaient faites il y a 50 ans. Ainsi, nous pouvons dire que chaque patient a sa "jambe de bois".

Quelques auteurs ont réagi durant cette période pour insister sur la nécessité d'intégrer l'appareillage prothétique dans le comportement physiologique du système gnatho-manducateur.

C'est dans cet esprit que l'équipe du Pr. Tourtet a conçu en 1976 le Chassis à selle amortie ou chassis amorti du Pr. Tourtet.

En fait, le chassis amorti a une dénomination imparfaite; nous l'avons retenue parce qu'elle était percutante, mais il serait préférable d'employer les terminologies suivantes:

- soit chassis amortisseur pour exprimer l'idée d'un chassis doté d'un dispositif ou ayant lui-même la faculté de réduire rapidement les chocs et les oscillations,

- soit chassis à selle amortie, définition plus explicite du chassis doté d'une selle au comportement indépendant pour répartir les efforts transmissibles aux supports prothétiques.

Description

Le chassis amorti comprend:

Le chassis

Le chassis représente la base métallique rigide de la prothèse. Ce peut être une plaque palatine pour le maxillaire ou une barre linguale pour la mandibule. Le chassis comprend également:

- des éléments de sustentation qui sont les barres de connexion,
- des éléments de stabilisation: les appuis,
- des éléments de rétention: les crochets.

La liaison selle — chassis

Toute l'originalité du système réside dans cette liaison. La caractéristique de ce système de liaison réside dans la position de la jonction de la selle avec le chassis qui est distale.

L'on distingue:

- le prolongement rétenteur,¹ en position supra-muqueuse par rapport à la crête et

qui est l'élément support de la selle et des dents artificielles,

- la barre de liaison² qui relie au châssis et aux éléments de rétention, le prolongement rétenteur,
- la courbe de liaison,³ en forme d'épingle à cheveux qui relie les deux éléments précédents et assure une partie de l'élasticité.

La selle

Elle recouvre largement l'arcade édentée et supporte les dents artificielles. Ses caractéristiques doivent respecter les définitions:

- une surface large, équivalente au triple de la surface occlusale des dents artificielles.
- un développement important sur les versants latéraux de l'arcade.
- elle doit englober au maximum la tubérosité maxillaire ou le trigone rétromolaire à la mandibule.
- au repos, elle appuie sans pression sur la fibro-muqueuse.

L'enregistrement des limites de la selle est réalisé lors de l'empreinte tertiaire. À la

finition de la résine, la selle sera espacée de la limite métallique du bras de liaison d'une valeur de 0,5 mm de façon à tolérer les mouvements de la selle.

Fonction

Le châssis amorti peut être considéré comme une évolution du châssis semi-rigide. En effet, il conserve un ensemble rétentif et stabilisateur rigide auquel nous associons une selle indépendante mais soutenue dans les mouvements.

L'analyse du comportement clinique de notre système prothétique permet d'affirmer que:

- les forces exercées sur les dents artificielles, donc transmises aux tissus ostéo-muqueux, sont de forte intensité mais de courte durée.
- les Lois de Jores (voir Annexe) sont ainsi parfaitement respectées.
- les effets secondaires issus de la selle prothétique ne sont pas susceptibles de léser les dents piliers.
- le châssis amorti répartit mieux les efforts entre les différents supports (dents et muqueuse).

Indications

Les résultats cliniques excellents en classes I et II nous ont amené à étendre l'utilisation du châssis amorti à toutes les classes d'édentation.

L'utilisation du châssis amorti en prothèse subtotale (cas d'édentations où ne subsistent que quelques dents) est particulièrement bénéfique. En effet la réalisation de châssis amortis dans de tels cas (qui sont souvent des cas de gérodontologie) assure une proprioception exceptionnelle à l'édenté et une conservation durable dans le temps des derniers piliers de la bouche.

Le dessin du châssis sera bien sûr adapté à chaque cas clinique en fonction des critères définis par les impératifs liés à l'édentation, au choix de la rétention ainsi qu'au montage.

Expérimentation Résultats Cliniques

Une expérimentation sur banc d'essai et la collation des résultats cliniques nous permettent d'affirmer que le châssis amorti permet:

- la préservation de la dent pilier.
- l'absence de nécessité de rebaser, donc le respect des tissus sous-jacents.
- le maintien de la D.V.O.

Cette expérimentation ainsi que la présentation des résultats cliniques feront l'objet de prochains articles.

Conclusion

Le châssis amorti, de par ses résultats cliniques, apporte d'énormes satisfactions au clinicien.

L'application du principe du châssis amorti est simple mais exige du praticien une grande rigueur tant au niveau de l'examen du patient, qu'au stade du plan de traitement et dans les différents temps cliniques.

Le praticien doit également acquérir l'esprit "Amorti" c'est à dire le sens de la physiologie manducatrice pour systématiquement envisager la création de l'appareillage le plus favorable au respect des organes de soutien tout en augmentant le confort du patient.

Annexe: Les lois de Jores

Les lois de Jores régissent le processus biologique qui entraîne ostéolyse ou ostéogenèse selon les pressions exercées par une selle prothétique sur les tissus ostéo-muqueux, à savoir:

- une pression continue empêche la formation d'une lamina dura des trabécules osseux. Elle entraîne donc de l'ostéolyse et résorption.

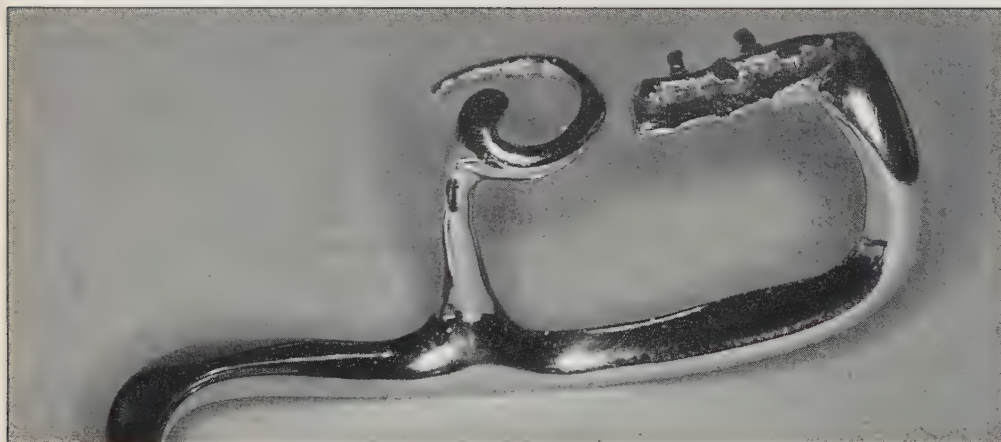


Fig. 1 et 2 – Le châssis amorti.

- des pressions intenses séparées par des intervalles de repos trop court agissent comme si elles étaient continuées. Il y aura donc ostéolyse et résorption.
- l'absence de stimulation entraîne aussi de la résorption.

- des pressions intenses séparées par des intervalles de repos espacés favorisent l'ostéogenèse et l'organisation osseuse (profonde et superficielle).

De ces lois biologiques (vérifiées quotidiennement par le clinicien: résorption sous une travée de bridge par défaut de stimulation ou sous une selle mal adaptée par excès de pression), il découle que:

- tout système prothétique exerçant de par un excès de pression une surcharge, ou n'exerçant pas de pression entraînera donc de la résorption.
- à l'opposé, tout système exerçant une stimulation de par l'exercice de pressions alternant avec des périodes de repos entraînera une stabilisation osseuse.

C'est ce principe que respecte le Chassis Amorti:

- en fonction, la stimulation s'exerce de par le mouvement de la selle (stimulation axiale et latérale de la crête)
- au repos, sans application de forces sur la selle, celle-ci est alors juxtaposée, aucune pression ne s'exerce.

Publications en rapport avec le Chassis Amorti

1. Desage A. Thérapeutique de l'édentation encadrée par le principe du chassis amorti de Tourtet. Thèse 2° Cycle. Lyon. 1986.
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9. Tourtet, L.C. Cours de Prothèse Adjointe Partielle. Cours polycopié. *Faculté d'Odontologie de Lyon*.
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Fig. 3 et 4 – Le chassis classique.

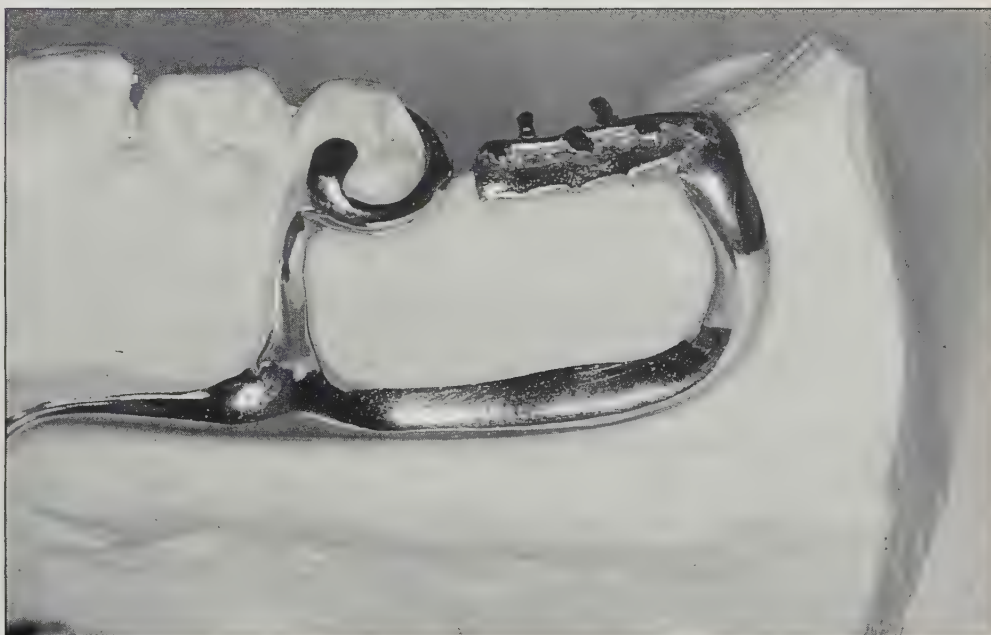


Fig. 5



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Announcements

April/Avril 1988

April: Annual Scientific Conference of the Irish Dental Association in Ireland. For more information, contact: Margaret Ferguson, Irish Dental Association, 29 Kenilworth Square, Dublin 6, Ireland.

April 7-10: 15th Congress of the Arab Dental Federation and 7th Jordanian Dental Congress in Jordan. For more details, contact: Dr. Irfan Sultan, P.O. Box 1326, Amman, Jordan.

April 9: Update – The Medically Compromised Patient with Dr. Barbara Steinberg at the Medical University of South Carolina. For more information, contact: Dr. Gordan Stine, Director, Dental Continuing Education, Medical University of South Carolina, 171 Ashley Ave., Charleston, S.C. 29425-2601.

April 9-10: Update – Partial Denture Design at the College of Dental Medicine, Medical University of South Carolina. For information, contact: Dr. Gordan Stine, Director, Dental Continuing Education, Medical University of South Carolina, 171 Ashley Ave., Charleston, S.C. 29425-2601.

April 9-10: The Institute for Practice Development: How to Build a Quality Dental Practice for the 1990's in Tampa Bay, Florida. Contact: The Institute for Practice Development, 7762 Silver Bell Dr., Sarasota, FL 34241 U.S.A.

April 9-16: 21st International Alpine Dental Conference at Hotel Annapurna, Courchevel, France. For information, contact: International Dental Foundation, 24 Cadogan Square, London, SW1X 0JP England.

April 11-15: Orthopedic Treatment with Functional Appliances in Malmo, Sweden. (English) For more details, contact: Lund University, Postgraduate Centre of Dentistry, Carl Gustafs vag 34, S-21421 Malmo, Sweden.

April 13-17: 1st International Congress on Maxillary Functional Orthopedics in Rio de Janeiro, Brazil. (English/Portuguese). For more information, contact: Secretaria Executiva do Congresso Congrex do Brasil, Rua de Ouvidor 60/614 – Centro 20040 – Rio de Janeiro – RJ – Brasil.

April 14-15: Annual Meeting of Alberta Society of Orthodontists and Western Canada Society of Orthodontists at Fantasyland Hotel in Edmonton, Alberta. Registration: Dr. J.L. Ares, 600 Empire Building, 10080 Jasper Ave., Edmonton, Alberta T5J 1V9 or phone (403) 421-1511.

April 14-16: 54th Annual Scientific Meeting of the Danish Dental Association & the Scandinavian Dental Fair Scandefa 88 For more information, contact: The Danish Dental Association, Committee for Postgraduate Education, 17 Amaliegade, Postbox 143, DK-1004 Copenhagen K, Denmark.

April 14-17: California Dental Association's Spring Scientific Session, Anaheim, California. Contact: Cissie Cooper, 818 'K' Street Mall, Post Office Box 13749, Sacramento, CA, 95853-4749, (916) 443-0505, (800) 421-8702.

April 21-22: GERIATRIC SYMPOSIUM "Times are changing – Are you ready? Clinical Management of the Elderly Patient" Winnipeg, Manitoba. Dentistry \$150, Allied Dental/Health Care Personnel \$75. Contact: The Division of Continuing Education, Faculty of Dentistry, University of Manitoba, 780 Bannatyne Ave., Winnipeg, Manitoba R3E 0W3. Tel: (204) 788-6331.

April 21-25: Third World Biomaterials Congress held in conjunction with the 14th Annual Society for Biomaterials, 20th International Biomaterials Symposium and the 10th Annual Meeting of the Japanese Society for Biomaterials in Japan. For more information, contact: Professor Yasuhia Sakurai, MD, Institute of Biomedical Engineering, Tokyo Women's Medical College, Kawada-cho 8-1, Shinjuku-ku, Tokyo 162, Japan.

April 25-26: Current Concepts in Periodontology in Malmo, Sweden. (English) For more information, write to: Lund University, Postgraduate Centre of Dentistry, Carl Gustafs vag 34, S-21421 Malmo, Sweden.

April 28-29: The Institute for Practice Development: How to Build a Quality Dental Practice for the 1990's in Orlando, Florida. Contact: The Institute for Practice Development, 7762 Silver Bell Dr., Sarasota, FL 34241 U.S.A.

April 28–May 1: 35th Annual Convention of Canadian Association of Oral and Maxillofacial Surgeons at the King Edward Hotel, Toronto, Ontario. The theme is "Risk Management in the '80s". For information, contact: Dr. Walter Dobrovolsky, 302 – 1849 Yonge St., Toronto, Ont. M4S 1Y2 or phone (416) 486-1551.

April 28–May 1: Alabama Implant Congress XIV in Birmingham, Alabama. For information, write: Alabama Implant Study Group, P.O. Box 4682, Birmingham, Alabama 35206 USA.

April 29-30: Precision Partial Dentures. A two day participation course sponsored by the Ontario Academy of General Dentistry at the Four Seasons Hotel in Ottawa, Ontario. \$380 AGD Members. \$395 non-AGD Members. Contact: Dr. John Miner (613) 235-8544.

May/Mai 1988

May 1-4: American Association of Orthodontists at the New Orleans Convention Center. For registration or more information, contact: Ms. Audrey Schaper, 460 N Lindbergh Blvd., St. Louis, MO 63141 U.S.A. (314) 993-1700.

May 5-7: Second International Symposium on Feeding and Dentofacial Development will be held at the American Dental Association headquarters in Chicago, Illinois. For more information, contact: Second International Symposium on Feeding and Dentofacial Development, 919 North Michigan Ave., Chicago, IL 60611 U.S.A. Tel: (312) 266-8198.

May 8-11: 121st Annual Spring Meeting of the Ontario Dental Association at the Sheraton Centre, Toronto. For more information, please contact: Diana Thorneycroft, 234 St. George St., Toronto, Ontario M5R 2P1 or phone (416) 922-3900.

May 8-12: American Academy of Oral Pathology at the Sheraton Society Hill in Philadelphia, PA. For details, write or call: Dr. Dean K. White, University of Kentucky, College of Dentistry, Lexington, KY 40536 U.S.A. (606) 233-5515.

May 9: University of Toronto, Faculty of Dentistry Class of 1973 **15th Year Class Reunion Dinner** (in conjunction with the ODA meeting) at L'Hotel in Toronto. Please contact: Dr. Wayne Pulver, 159 Willowdale Ave., Willowdale, Ont. M2N 4Y7 (416) 222-9900.

May 10-15: American Academy of Oral Medicine at Sheraton Hotel at Fisherman's Wharf in San Francisco, California. For information, write or call: Dr. Sheldon Ross, 40 Twisting Lane, Wantagh, NY 11793 U.S.A. (516) 785-4414.

May 11-13: American Society for the Advancement of Anesthesia in Dentistry in Canberra, Australia. For more information, contact: Ms. Nancy Ferraro, 475 White Plains Rd, Eastchester, NY 10708 U.S.A. (914) 961-8136.

May 14-17: American Academy of Pediatric Dentistry at the Del Coronado Hotel in Coronado, CA. For information: Dr. John A. Bogert, 211 E Chicago Ave., Suite 1036, Chicago, IL 60611 U.S.A. (312) 337-2169.

May 14-17: 24th Annual Convention of the Jamaica Dental Association in Ocho Rios, Jamaica. For information, write to: Dr. C.D. Barrett-Boyne, Convention Chairman, Jamaica Dental Association, P.O. Box 19, Kingston 5, Jamaica West Indies.

May 15-20: 25th Australian Dental Congress, Sydney, Australia. "An international meeting during Australia's bicentennial". A limited number of brochures are available at the CDA, or contact: 25th Australian Dental Congress, P.O. Box 29, Parkville, Victoria, Australia, 3052.

May 15-20: Academy of Denture Prosthetics at the Bahama Princess Hotel in Freeport, Bahamas. For information, contact: Dr. Charles C. Swoope, 1515 116th Ave. NE, Suite 303, Seattle, WA 98155 U.S.A. (206) 455-5661.

May 20-22: 18th International Meeting on Dental Implants and Transplants in Bologna, Italy. Details from: G.I.S.I., Prof. Giordano Muratori, Via S. Gervasio 1, 40121 Bologna, Italy.

May 20-22: Periodontal Surgery — A Didactic and Laboratory Exercise at the College of Dental Medicine, Medical University of South Carolina. For information, contact: Dr. Gordan Stine, Director, Dental Continuing Education, Medical University of South Carolina, 171 Ashley Ave., Charleston, S.C. 29425-2601.

May 27-28: The Human TMJ — A Didactic Exercise with Dr. James River and Dr. Richard Dom at the College of Dental Medicine, Medical University of South Carolina. For information, contact: Dr. Gordan Stine, Director, Dental Continuing Education, Medical University of South Carolina, 171 Ashley Ave., Charleston, S.C. 29425-2601.

May 30-June 2: Third International Congress of Gerodontology at the Palais des Congrès in Montréal, Québec sponsored by the Order of Dentists of Québec and the International Association of Gerodontology. For information, contact: Dr. Roland Vallée, École de Médecine dentaire, Université Laval, Ste-Foy (Québec) G1K 7P4.

June/Juin 1988

June 1-8: American Dental Hygienists' Association at the Westin Hotel in Seattle, Washington. For more information, contact: Ms. Anne Kaczmarek, 444 N Michigan Ave., Suite 3400, Chicago, IL 60611 (312) 440-8900.

June 2-5: 88th Annual Conference of the Canadian Lung Association at Hotel Newfoundland, St. John's, Newfoundland. For information, contact: A. Les McDonald, Director, Health Education and Program Services, Canadian Lung Association, 75 Albert St., Suite 908, Ottawa, Ont. K1P 5E7 or tel. (613) 237-1208.

June 3-4: Operative Dentistry at the College of Dental Medicine, Medical University of South Carolina. For information, contact: Dr. Gordan Stine, Director, Dental Continuing Education, Medical University of South Carolina, 171 Ashley Ave., Charleston, S.C. 29425-2601.

June 3-5: 1988 Canadian Academy of Periodontology Annual Meeting, Pan Pacific Hotel, Vancouver, B.C. Speakers:

Dr. Jan Lindhe: Current Concepts of the Etiology and Pathogenesis of Periodontal Disease. Dr. Stan Sapkos: The Role of the Periodontist in Implant Therapy. Contact: Dr. K. McAnulty, #304-126 East 15th St., North Vancouver, B.C. V7L 2P9. (604) 980-5822.

June 8-13: Hong Kong Dental Association/China Medical Association Joint Dental Symposium in Beijing, People's Republic of China. For details, contact: Mrs. Yvonne Ng, Executive Secretary, Hong Kong Dental Association, Duke of Windsor Social Service Building, 8/F, 15 Hennessy Road, Hong Kong. Tel: 5-285327.

June 9-11: Society for Oral Oncology will hold its annual meeting at the Meridien Hotel in Vancouver, British Columbia. Information concerning accommodation, scientific and social programmes can be obtained from the local arrangements chairman: Dr. P. Stevenson-Moore, Cancer Control Agency of BC, 600 West 20th Ave., Vancouver, BC V5Z 4E6.

June 13-15: Dental Implants Consensus Development Conference in Bethesda, Maryland sponsored by the National Institute of Dental Research, the Food and Drug Administration and the NIH Office of Medical Applications of Research. To register, contact: Conference Registrar, Prospect Associates, Suite 500, 1801 Rockville Pike, Rockville, Maryland 20852. (301) 468-MEET.

June 15-19: Dental Laboratory Conference at the Denfey Hyannis Hotel in Cape Cod, Maine. For details, please contact: Mr. Robert Gitman, 1918 Pine St., Philadelphia, PA 19103 U.S.A. (215) 546-2313.

June 16-18: 1988 Convention of the College of Dental Surgeons of British Columbia at the Vancouver Trade and Convention Centre. Topics cover Practice Management to Practical Perio. For further information, contact: College of Dental Surgeons of BC, 1125 West 8th Ave., Vancouver, B.C. V6H 3N4 or phone: (604) 736-3621.

June 21-24: 53rd Annual Meeting of the Pacific Coast Society of Prosthodontists in Sun River, Oregon. For more information, contact: Dr. Richard Frank, Prosthodontics SM-52, University of Washington, Seattle, Washington 98195 U.S.A.

June 25-30: Flying Dentists Association at the Sand Destin Hilton in Destin, Florida. For information, contact: Dr. Ted Riegelman, 12 East St., Parkville, MO 64152 U.S.A. (816) 741-0112.

June 25-July 2: Bermuda Dental Association Convention (School is out!) Limited attendance convention. For pre-registration, group travel accommodation and family rates, contact: Dr. Bob Brandon, 85 Lonsdale Dr., London, Ontario N6G 1T4 or phone (519) 657-3368.

June 25-July 4: Yukon Dental Association Summer '88 Continuing Education Program. Two days of clinical presentations to be followed by a week long canoe trip on the Klondike Trail of 1898 down the Yukon River to Dawson City. For details, write: Dr. John Stern, Suite 4, 3089 3rd Ave., Whitehorse, Yukon Y1A 5B3. *Please note: Dates appearing in the January and February issues were incorrect.*

June 26-30: Second World Dental Conference in Jerusalem, Israel. Details from: The Secretariat, Second World Dental Conference, P.O. Box 50006, Tel Aviv 61500, Israel.

June 28-July 1: 94th Annual Meeting of the American Dental Society of Europe in Porto Carras, Greece. Details from: Dr. C.R. Debenham, 1 Harley St., London W1N 1DA, England.

July/Juillet 1988

July 1-3: British Dental Association's Annual Conference, Harrogate International Conference Centre, Harrogate, Yorkshire (UK). "Facing the Future". Contact: Linda Bridges, Conference Office, 64 Wimpole St., London, England. W1M 8AL.

July 1-3: Florida National Dental Congress sponsored by the Florida Dental Association will be held at the Marriott's Orlando World Center, Orlando, FL. For more information, contact: Betty Waggener, Director, Florida National Dental Congress, 3021 Swann Ave., Tampa, FL 33609 U.S.A. Tel: (813) 877-7597.

July 15-20: Academy of General Dentistry at the Hyatt Regency in Chicago, Illinois. For registration information, contact: Ms. Debbie Jepsen, 211E Chicago Ave., Chicago, IL 60611 (312) 440-4300.

August/Août 1988

August: University of Alberta graduates wishing to have a class reunion during the **CDA Convention** please contact Sandra Kerluik at the U of A Alumni Office (403) 432-3224 if you require assistance in organizing your reunion mailing. For assistance in function space, please contact Florence Ingham at 432-3066.

August 5-7: Singapore International Dental Exhibition and Conference Dentistry's Challenges, AD 2000 and Beyond. For more information, contact: SIDEC 88, Orchard Dental Centre Pte Ltd, 268 Orchard Rd, #05-07, Yen San Building, Singapore 0923.

August 7-11: American Association of Hospital Dentists at the Hershey Hotel in Philadelphia, Pennsylvania. For information, please contact: Dr. Manuel M. Album, 491 N York Rd, Jenkintown, PA 19046 U.S.A. (215) 887-3838.

August 7-11: Ninth Congress of the International Association of Dentistry for the Handicapped, Philadelphia, PA. Contact: Public Relations, (215) 576-2303, Abington Memorial Hospital, Abington, PA. 19001.

August 8-13: Preventive Dentistry and Epidemiology 1st International Conference sponsored by the Dental Health Center of Karlstad Sweden together with a Course on "Table clinics and demonstrations of preventive materials, programs and methods". For more information, contact: The Preventive Dental Health Center, c/o Hjärnbruket, Box 9055, S-650 09 KARLSTAD, Sweden. Tel: 46 054-13 20 10.

August 12-14: 4th Annual A.C.O.I. Symposium sponsored by the American College of Oral Implantology and the International Congress of Oral Implantologists in Denver, Colorado. For further detail, contact: Margaret M. Jackson, Executive Director, I.C.O.I., 248 Lorraine Ave., 3rd floor, Upper Montclair, N.J. 07043 U.S.A.

August 19-21: 40th Annual Scientific Meeting of the Canadian Association of Orthodontists at the Fantasyland Hotel in Edmonton Alberta. "Future Perspective in Orthodontics". For more information, please contact: Dr. Terry Carlyle, #1525 Weber Centre, 5555 Calgary Tr. S., Edmonton, Alberta T6H 5P9. (403) 435-3641.

August 21-24: Canadian Dental Association's Annual Convention, at the Edmonton Convention Centre, Edmonton, Alberta. Contact: Linda Teteruck, Canadian Dental Association, 1815 Alta Vista Dr., Ottawa K1G 3Y6. (613) 523-1770.

August 21-25: New Zealand Dental Association's Biennial Conference, Christchurch, New Zealand. Contact: Dr. E.A. Cope, Conference Secretary, 200 Cashel Street, Christchurch 1, New Zealand.

August 23-28: Dental Group Management Association at the Hyatt Regency in Vancouver, BC. For more details, contact: Ms. Joann Junkins, #3 Lakewood Gardens Lane, Madison, WI 53704 U.S.A. (608) 241-2109.

September/Septembre 1988

September 7-9: Bristol 88 World Dental Conference University of Bristol, England, U.K. Decisions in Forward-Looking Oral Health Care. For information contact: Mr. B.P. Matthews, Bristol 88 World Dental Conference, University of Bristol, Senate House, Bristol BS8 1TH ENGLAND, U.K.

September 15-18: American Academy of Gnathologic Orthopedics at Caesar's Palace in Las Vegas, Nevada. For more information, contact: Ms. JoAnna Carey, 211E Chicago Ave., Chicago, IL 60611 U.S.A. (312) 642-5834.

September 23-25: American Academy of Esthetic Dentistry at the Hyatt Regency Cambridge in Cambridge, Massachusetts. Contact: Ms. Cheryl Kraus, 211E Chicago Ave., Suite 948, Chicago, IL 60611 U.S.A. (312) 664-2122.

September 23-25: California Dental Association's Fall Scientific Session, San Francisco, California. Contact: Cissie Cooper, Director, Scientific Sessions, CDA, 818 "K" Street Mall, P.O. Box 13749, Sacramento, California, 95853-4749. (916) 443-0505.

September 29-October 1: New Orleans Dental Conference at the New Orleans Hilton, Poydras at the Mississippi River in New Orleans, Louisiana. For more information, contact: Ms. Normalee Ward, 3101 West Napoleon Ave., Suite 119, Metairie, LA 70001 U.S.A. (504) 834-6449.

October/Octobre 1988

October 8-14: ADA/FDI Joint 1988 World Dental Congress Dentistry: Caring for the World at Washington, D.C. For more information, contact: Congress Secretariat, ADA/FDI Joint 1988 World Dental Congress, c/o American Dental Association, 211 East Chicago Ave., Chicago, Illinois 60611 USA or FDI Headquarters, Fédération dentaire internationale, 64 Wimpole St., London W1M 8AL, United Kingdom.

October 9-14: International Workshop on Cranio-facial Trauma sponsored by the Australian Cranio-Maxillo-Facial Foundation. For information, contact: Mrs. D. Moody, Executive Officer, 226 Melbourne St., North Adelaide, S.A. 5006, Australia.

October 25-27: Medical/Hospitech 88 — 2nd International Medical, Hospital and Dental Equipment and Facilities Exhibition in Bangkok, Thailand. For more information, contact: SHK International Services Ltd., 22/F., 151 Gloucester Rd., Hong Kong. Telephone: 5-8326100.

October 26-29: 42nd Annual Meeting of American Academy for Cerebral Palsy and Developmental Medicine Deadline for free papers: February 12, 1988. Royal York Hotel, Toronto. INFO: AACPDM, P.O. Box 11086, Richmond, Virginia 23230 USA.

November/Novembre 1988

Novembre 21-25: Festival international du Film et de la Vidéo dentaires—XIèmes Journées dans le cadre du Congrès International de l'Association Dentaire Française. Bulletins d'inscription au concours devront parvenir au Secrétariat avant le 15 février 1988. Renseignements et inscriptions: Dr. M. Dolovici, Secrétaire générale du Festival international du Film et de la Vidéo dentaires, 92 avenue de Wagram, 75017 PARIS.

Miscellaneous

The classified section of the Journal of the Canadian Dental Association is especially for you the dentist (not for commercial businesses). Take advantage of this marketplace to give you the results you want.

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For details write:

Dr. John Stern

Suite 4, 3089 3rd Ave.

Whitehorse, Yukon Y1A 5B3

Please note: Dates appearing in this advertisement for the January and February issues were incorrect

Offices and Practices

BRITISH COLUMBIA: Solo family practice with good recall system and excellent staff. The Sunshine coast is a growing area and this town has steady employment and high percentage of insurance. I will be your associate for an introductory period. (604) 485-2851.

BRITISH COLUMBIA—Sooke (near Victoria): General family practice established 12 yers. Providing all facets of dentistry. Well located in growing community. Large patient base will assure continued good income and steady growth from active recalls and new patients. Terms negotiable. Dr. John Bidgood. Business (604) 652-2521 or (604) 652-3535 or Home (604) 652-4114.

BRITISH COLUMBIA—Vancouver: Established growing pediatric practice for sale with active recall system in non-fluoridated area. Opportunity for hospital dentistry. Respond to: Dental Office Manager, 243-1755 Robson Street, Vancouver, B.C. V6G 1C9.

BRITISH COLUMBIA—Victoria: Rewarding practice opportunity or associateship available with our progressive, growing, total care, quality practice. Prime location. Computerized office. Super caring staff and excellent patient flow. For more information, please call (604) 381-6433 or (604) 595-8050 evenings.

ALBERTA—Calgary: Well-established, edgewise orthodontic practice for sale. Owner will stay for smooth transition. Reply to CDA Box 2402.

ALBERTA—Central: Large general practice for sale. Approximately 5,000 active patients. Three operatories, 1600 sq. ft. Present owner returning to school in September but is willing to assist in transition. Terms negotiable. Reply to CDA Box 2400.

ALBERTA—RED DEER

Established general practice for sale. Includes equipment, supplies etc. Owner retiring. Leave name and phone number with 403-343-7130 evenings, mountain time and owner will return call or write CDA Box 2397.

SASKATCHEWAN: PRACTICE FOR SALE — Fully modern equipped Pelton & Crane 5 operator preventive oriented practice doing all aspects of dentistry. Owner wishes to return to school but will remain for 1 year after sale for transitional purposes. Phone (306) 384-7191 (office) or (306) 955-2234 (home).

NORTHERN SASKATCHEWAN: For sale. Long-established practice. Excellent location. 1200 sq. feet corner office. Three fully-equipped operatories; two with Pelton Crane and Cox units. Satellite practice also available. Terms reasonable. Phone (306) 763-3676 evenings.

SOUTHERN SASKATCHEWAN: Busy 6 year-old practice for sale. 4 fully-equipped operatories. Excellent recall and hygiene programs. Office known for its efficient and friendly delivery of care. Reasonable price. Call (306) 634-7261 (B) or (306) 634-7827 (H).

SOUTHERN ONTARIO: Endo and Periodontist — Georgetown 40 minutes from Toronto wanted to share existing new office space with Oral Surgeons. Please contact Dr. S.J. Levitz, 77 Queensway West, Unit 212, Mississauga L5B 1B7.

SOUTHWEST ONTARIO: Busy, established, family practice for sale in small town. Modern 30' x 50' building, air-conditioned, two well-equipped operatories. Reception and business areas, lab, kitchen, bathroom, private office and staff room (or third operator). Excellent income, low overhead. Please call (519) 482-5664.

NEW BRUNSWICK—Saint John: General practice for sale. Owner retiring. Some basic equipment available. Over 1200 active patients (mostly adults) approximately 50 percent have dental insurance. Phone evenings (506) 672-9588.

NOVA SCOTIA—Halifax: Established downtown general practice for sale, located in Purdy's Wharf. Sale includes share of modern equipment, sundries, and term lease of office space. Practice includes a large recall clientele (mostly adult). Suitable for an experienced operator or two graduates. Apply to Box CDA 2327 or in confidence to Dr. Stewart Keddy, 43 Westridge Dr., Halifax B3M 3K3.

Associateships Available

BRITISH COLUMBIA—100 Mile House: Associate required. High gross practice requires an associate with partnership potential. We offer a generous percentage and flexible terms. The new associate would be replacing a partner with approx. 2500 recall patients. For more information, please call (604) 395-3131 days or (604) 395-3996 evenings.

ALBERTA: Associateship available for general practice in Calgary starting in May 1988. Please contact Dr. Stephen Lee at (403) 280-3232.

ALBERTA: Associate required for busy, rural practice with possibility of future purchase. Associate could begin May '88. Modern, well-equipped practice in a town of 5,000 people located 200 km northeast of Edmonton. Please reply to CDA Box 2401.

ALBERTA—Calgary: Associate required for rewarding practice opportunity in SW Calgary. Associate required immediately for extended hours leading to full-time office hours in Spring 88. Very pleasant, modern office in excellent location. Computerized with a very pleasant staff. Contact Dr. James McKenzie (403) 246-9628 home or Dr. Sheri McKenzie (403) 258-1333 office.

ALBERTA—Edmonton: ASSOCIATE WANTED — In well-established extended-hour practice, with opportunity for purchase in future. Excellent opportunity for an ambitious quality-oriented practitioner. Reply to CDA Box 2369.

SASKATCHEWAN—Regina: Associate required for full-time general practice in Pedodontist's office. Excellent location with buy-in potential for right person. Develop own practice without financial burden. Contact Dr. R. Whyte, 4621 Albert St., Regina, Saskatchewan S4S 6B6, (306) 584-3414.

ONTARIO: ASSOCIATE wanted for Oral and Maxillofacial surgery practice in Ottawa. Candidate should be certified as specialist in Ontario or should be eligible for specialty certification. Send Résumé to Box 2360.

ONTARIO—Brampton: Associate required part-time in busy, newly renovated, family practice. Days negotiable. Please call (416) 457-4700.

ONTARIO—Mississauga: Periodontist. Our busy, modern, growing offices seek periodontists to relieve patient overflow for general group practice. Equal opportunity. Please call Lynda (416) 823-4121.

ONTARIO—Niagara Region: Associate required for a modern two-operatory family practice located in a well-established medical building. Partnership/purchase opportunity available. Call (416) 871-2903.

ONTARIO—Ottawa: Associate required for West Ottawa mall location. Seeking dynamic, caring individual to join progressive, highly preventive group practice. Join an established, modern facility with motivated support staff. Perio, ortho, and oral surgery specialties to work with as well. Call Susann at (613) 592-2900.

ONTARIO—Pembroke: Established general and family practice requires a capable, conscientious and ambitious associate immediately. Excellent opportunity to practise all phases of dentistry. Present associate returning to graduate studies. Hospital privileges available. Many new patients, plus existing files to pass on to new associate. Contact Dr. B.L. Jurmalietis at (613) 732-4440.

QUÉBEC—Montréal: General practice and orthodontic specialist associates required for new family-oriented dental practice located in Montréal. Please contact Gayle (514) 332-5012.

NORTHERN NOVA SCOTIA: Associate required. Excellent opportunity for right person in a progressive, health-centred

dental practice located in scenic rural Nova Scotia. We have a large recall practice, team-oriented with emphasis on all phases of dentistry. There are four fully-equipped, state-of-the-art operatories with room for expansion. Buy-in potential for the appropriate candidate. Apply to CDA Box 2399.

NOVA SCOTIA—Shelburne: Associate/ Partner required for long-established (and very busy) south shore practice. One dentist retiring. For more information, please write: P.O. Box 418, Shelburne, Nova Scotia B0T 1W0 or phone: (902) 875-2698.

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JOURNAL DE L'ASSOCIATION DENTAIRE CANADIENNE

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Back Talk

by Jean Cives

Prestige

How amazing it is that we spend our days performing minutiae in people's mouths. Stop for a moment, and reflect. Look in the mirror. Right before you is Dr. Average reputed to be 70 Kgs if a male, in all human splendor, with bumps and excrescences all over; looking pretty, as in paintings and sculpture by the old masters who deceived us into thinking that the human shape has beauty but not in my bathroom, this morning I can assure you. What a sight, really was a bad start to the day. There before you is such a specimen — and what do you do for a pittance — you look into the mouths and go on at length about stumps of ivory set in pink gums! At least a physician can switch to other orifices when one or another palls. So we massage them, polish them? No, we cut holes in their stumps. Is this not some form of lunacy, think on it.

Yet we have high prestige for our efforts. A magazine reported last year that a survey of ordinary citizens showed that people trust a dentist more than physicians, lawyers, bank managers, and such professionals. To nobody's surprise the used car salesman came last.

Colleagues, (our way to classify fellow workers — you really would not want them as friends) do all manner of strange things to gain prestige. The purchase of exotic cars for example. At least three fellows I know bought shockingly expensive autos of reputed high class. But the proud owners spoil the effect — they install molester alarms or park them in the equivalent of bank vaults so that no one will ever see them, for fear someone will deface the symbol. How can you gain prestige by display, if the only time anyone sees it is in the gas station having the gas replaced that they used getting to the gas station?

Velvet suits? Yes, a lady told me at a cocktail party, that she knew that all dentists wear velvet suits. She organized dental conventions and said all the dentists out-class any other class of conven-

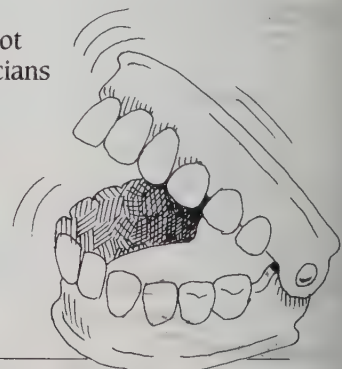


ioneer. There are one or two such chaps in town, who look like fugitives from a five year old's birthday party in Westmount or West Vancouver. But they are balanced by one amiable lunatic of dental origin known to have worn three different checked patterns — pants, jacket and shirt. His were the only clothes that I ever heard — they hummed with tension as he walked by. Curiously enough he had more prestige (but less clothes sense) than Gucci's subscribers.

There are those that are in their office to make a statement. A friend recently opened a new office, and his fascination was with a marble counter top for Madam receptionist. This was in his opinion to establish him as one of the Important Persons (sub-section Important Dentists). But the spoken jest is mightier than the humble marble chisel. An Australian Dentist viewed this marbled marvel, said, "Cheez, Bertram Boy, you got your own mortuary here, slab and all!" My heart ached for Herbert, 20 years planning and design destroyed in a single Antipodean flush. Others try long-legged blondes and experience the terrors of the fiscal suicide of divorce. Some try carpets and become terrorized by papers on mercury poisoning among dentists. One fellow I visited

one time had a fountain, cherubs, angels and small boys with doves, the whole bit of Greco-Italian Bourgeois, Boondoggle, right there in the waiting room. It sure impressed me — I wondered what the Bank downstairs was going to say the day it overflowed and dropped through the sodden ceiling into the Loan Officer's lap. I am a believer in the Christmas card theory expressed in the London Times once. It goes like this; Bring nothing into the office until it's reached its time. Nothing new and shiny, but all furniture and fittings with a used look, not grubby but used. When asked why I say, "Well it costs less and I keep the money so saved and spend it on myself!" Pedodontists these days have got the bug it seems, and offices based on Star Wars, or Dungeons and Dragons are seen in every second mall. Our group is planning a renovation — we are going to develop our own decor and style — era — late 60's lean, mean, and worn. Some of the chairs at the summer camp can now come home? We are a combatant unit not in the Dream World.

I do not think we get it from being called "Doctor". I think not that it's the office. Is it pain — threat thereof, or relief therefrom? Possibly. But probably mainly because few dentists, I know, are not concerned about their patients. A patient I had not seen for 10 years asked her daughter to tell her dentist to tell me if she, the dentist, ever saw me, that her grandmother, (my patient) had moved out of town. Just a few days later in the liquor department I was hailed over the white wines of Italy by a dentist who passed on this message. I bet not too many physicians and lawyers provide such ancillary services! △



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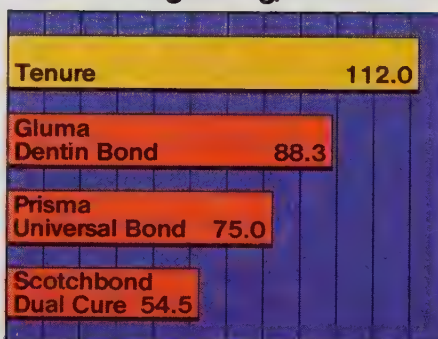
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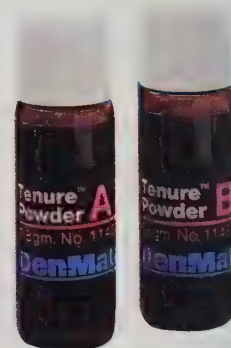


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- "Oxalate Dentin Bonding", Dr. H.E. Strassler and Dr. S. Weiner, accepted for publication by Compendium of Dental Education.
- Dental Advisor Vol. 4, No. 3 September 1987.
- Clinical Research Associates, Vol. 11, Issue 9, September 1987.

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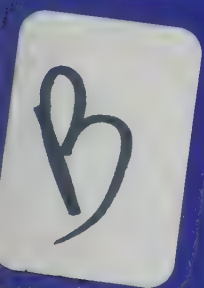
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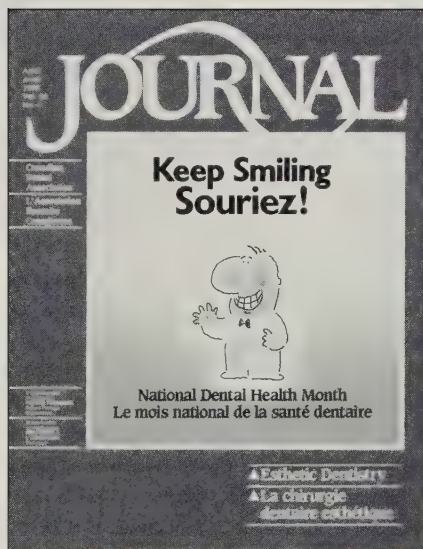
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ESTHETIC DENTISTRY a new direction

Esthetic dentistry is an exciting and rewarding concept that has become a bold and underlying theme throughout all the dental disciplines. In the past, both medicine and dentistry have been more concerned with the alleviation of physical pain and disease. Only within the past decade have tremendous technological advances allowed patients to expect and to receive the very best in esthetic dental treatment from their dentists.

Along with the expectation of technical competence, the American public expects a caring and concerned dentist and dental staff. Dental offices today reflect this caring attitude in their professional service to the public. Dentists enjoy the satisfaction that comes from a well-done treatment that is both functional and esthetically pleasing, and gives the patient a feeling of well-being and satisfaction.

How has this revolution in patient care occurred? Although there are always visionary individuals in any field, one name comes readily to mind in the field of esthetic dentistry: Dr. Charles Pincus. Maybe it was the Hollywood setting and the dental needs of that make-believe world, but Dr. Pincus set the stage for many of the changes we see today. Porcelain and ceramic inlays and onlays are becoming popular with the public, but the roots of those techniques go back nearly 100 years to the genius of an American giant in dentistry, Dr. Greene Vardiman Black. So you see, the ideas about the art of dentistry have existed for a long time, but technological advances and control of dental disease were required before dentists could universally embrace the enjoyable art of dentistry that we know as esthetic dentistry.

Of all the events in dental history, perhaps

This editorial appeared in JADA (Special Issue) December 1987 and is reprinted with special permission from Dr. Faunce and the ADA.

the advent of fluorides stands out as the turning point for the growth of esthetic dentistry. The health community and the American Dental Association are universally recognized for accomplishing this singular public health measure that has begun to bring dental caries under control. Industry and government have joined hands with dentistry in this spectacular attempt to eradicate dental caries in this country, and we are beginning to see the reward of these efforts — a cariesfree generation of youngsters! Some individuals may see the half-empty glass in this event, but I see the opportunities for the dental profession to turn a corner and enter the real golden age of den-

tistry, taking a new direction with esthetic dentistry as its banner.

Improved oral hygiene measures, espoused by Dr. Robert Barkley in the late 1960s and early 1970s, taught and practiced currently, go hand-in-glove with all the esthetic dental advantages available to the patient today. The force of esthetics in dentistry was propelled by the advent of acrylic resin technology during World War II and advanced further through the genius of Dr. Rafael Bowen and his work with composite resins. Dr. Michael Buonocore's brilliant concepts of micro-mechanical bonding principles of acid-etch techniques set the stage for esthetic dentistry as we now know it. Porcelain-fused-to-metal techniques are important in esthetic dentistry but they, too, are bonding procedures not unlike the enamel bonding procedures we all take for granted today. Just as the opportunity

of flight for man had to wait for the internal combustion engine, esthetic dentistry has had to wait for the development of all of these technological events for the dental profession to enter this exciting era.

The advent of the computer, CAD-CAM technology, and laser imaging along with ultrasound, CT scanning, nuclear magnetic resonance (NMR) diagnostic techniques, hand-held computerized X-ray equipment, intraoral lasers for treatment, and miniaturized video for diagnosis and treatment paint a golden image for the future of dentistry. It will be a future in which patients can appreciate all that modern dentistry has to offer, instead of dreading dental treatment.

The advent of esthetic dentistry ushers in a new golden age that is revolutionizing the art and science of our profession. △

Frank Faunce, DDS

JCDA Editor's comment

This month's guest editorial "Esthetic dentistry: a new direction" by Dr. Frank Faunce, first appeared in a splendid supplement entitled "Esthetic Dentistry" which accompanied the December 1987 Journal of the American Dental Association. It is repeated here because it describes so very well the evolution of what Dr. Faunce calls the "new golden age."

The average family practitioner of today is in a dental world so very much different from a generation ago. Just 25 to 30 years ago it was the norm to see children and young adults appear in our offices with multiple interproximal caries where the treatment of choice was silicate and unreliable resins. The prognosis all too often was, dentures at too early an age!

Today, how different; and dentistry can take credit and pride. The devastating caries are fast declining (non-existent for many) and the treatment choices for esthetic dentistry are numerous.

With any rapidly expanding technology there must be some caution. Dentists are literally bombarded with entrepreneurial assaults to "try this new miracle product." Caution is also required in believing everything heard and seen at continuing education courses. Like the products, the proliferation and parade of lecturers on the "cosmetic circuit" is increasing (and the cost of course is not necessarily directly proportional to the knowledge gained!) Dental faculties can no longer, in today's crowded curricula, cover all that is required in any discipline, let alone the courses in restorative dentistry. The dentist, probably more so today than ever before, must be the continuous student.

Dentistry with its tremendous technological advances has increasing opportunities to provide quality of life for its patients. However, these opportunities must always be accompanied with increasing study, diligence and care. Only then can that intelligent choice of the product/technique that works best in hands, satisfy optimally the particular needs of the patient. △

*P. Ralph Crawford, DMD,
Editor, JCDA*

Strategic Planning

The Future of Dentistry

Strategic Planning is a 'buzz' word that has a bad connotation to many people who consider themselves decision makers or doers. The problems are obvious and the solutions should leap out at us to be embraced by all factions in a unanimous display of reason and logic. Good luck. The national debate on the supply of dental human resources and its implications for the future of dentistry is a classic example that bears further scrutiny.

Canada and the United States do have a dental human resource problem. The applicant pool to U.S. dental schools has dropped by 70 per cent from its peak period. Our own applicant pool remains strong and well qualified, but what will be the future trend? Disease patterns have changed; the economic climate has changed; consumer awareness has changed; and, delivery of health care has changed. How have we responded? On what criteria do we base our need to modify and develop our strategies for the future? Who is involved in making these decisions and how quickly can they act?

Professional Resources has been the focal point of a debate that swings between the extremes of those who would close dental schools tomorrow, and those who would accept none of the existing data and want more in-depth study of the issue for another five to ten years. What is needed is a rational plan that can evaluate available data, fill the holes where necessary and adjust every few years to what is actually happening. Is this a realistic goal? It is already beginning to take place. The CDA Professional Resource Utilization Committee was a start, and resulted in a cooperative venture with the deans of our dental schools to attempt to reduce enrolment.

A recent CDA Teaching Conference on Strategic Planning was attended by the Canadian Dental Association, the Association of Canadian Faculties of Dentistry, government representatives, auxiliary groups, and representatives from most other corners of our profession. All participants agreed that we must continue to meet and cooperate. Such a meeting could not have been as successfully held a few years ago. However, we now have the unique opportunity to draw these groups together in an atmosphere of cooperation and trust. Professional resources must be monitored and curriculums revamped to meet the needs of patients of today and tomorrow, but the integrity of all of our institutions, academic and otherwise, must be respected in the process. This is the only way that the public will continue to be assured of the highest possible standards of oral health care. The Toronto meeting was a valuable step along the way. All of the participants in that meeting appreciated that their own piece of the puzzle must be reshaped to fit the future picture.

We may require fewer dentists now, but as our population ages, keeps its teeth and acquires more economic clout, there could be some surprises in store. We need to know what to expect and how to react. You may not want to hear a 'buzz' word, but we need a strategic plan for the future of dentistry. Let's all continue our efforts to see that it is developed in time. △

*Ron J. Markey, DDS, MSD
President of the Canadian Dental Association*



Organ Donation: Health Care Professionals Support Through Commitment



CANADIAN DENTAL
ASSOCIATION



Health and Welfare
Canada

April, 1988

Dear Colleague/Dental Health Professional:

We are writing this letter as a personal appeal to you and, through you, to members of your family, to give the ultimate gift to others by signing an organ donor card and making your wishes known.

Organ and tissue transplantation offers an opportunity for an improved quality of life and, indeed, survival for thousands of Canadians, but there is a shortage of donor organs. To overcome this problem, more people are required with a commitment to organ donation. As well a more effective system is needed to help ensure that a person's wish to donate is honoured.

You can help to improve this situation. We urge you as a role model to make your personal commitment to organ donation, and ask that you sign one of the enclosed donor cards, inform your family of your decision and encourage your spouse, children, parents, siblings and other family members to follow your example. Information on organ donation and transplantation is contained in an article included in this issue of the Journal. Please share it with your family.

Affirm your commitment to organ and tissue donation. Sign a card and begin telling others today.

Ron J. Markey, DDS, MSD
President
Canadian Dental Association

Jake Epp
Minister
Department of National
Health and Welfare

We are all very aware of the importance of having healthy organs available for transplantation purposes. One has only to read the daily news to hear of life saving operations performed and, tragically, deaths due to the lack of suitable transplant organs. National Organ Donor Awareness Week is April 24-30, a time to give thought to your wishes in this regard.

A letter from the Honorable Jake Epp, Minister of the Department of National Health and Welfare, and CDA President Dr. Ron J. Markey on organ donation is contained in this issue of the Journal. Please read it carefully and consider making a commitment in support of organ donation cards provided.

A number of national health associations, including the Canadian Medical Association have recently become involved in organ donor campaigns. The number of Canadian physicians who have signed donor cards rose to 64 per cent — an increase of more than 50 per cent over previous figures as a result of the CMA's involvement.

In commenting to Executive Council on the involvement of the CDA and the dental profession, President Ron Markey stated:

"The program would offer an excellent example of dental professionals providing leadership for their patients and the public, and illustrating this by personal example".

If you have not yet made an informed, conscious decision whether or not to sign an organ-donor card, why not do it today? Make it *your* decision. Join together in this most worthy cause.

The following information was developed by Sandoz Canada Inc., leaders in transplant research, in collaboration with the Canadian Kidney Foundation, to help those seeking guidance and understanding with regard to organ donation: Organ donation has become an important hope for prolonging life. As progress continues in solving the problems associated with transplantation, the need for liver, pancreas, heart, kidney and other organs is rapidly increasing.

Who can be an Organ Donor?

Current legislation now allows any person of legal age to volunteer for organ donation in the event of his/her death. The presence of a signed organ donor card indicating your wishes makes discussion between your doctor and your family less difficult. It also removes the responsibility of the decision from your family.

If I consent to organ donation, how can I be sure that every effort will be made to save my life?

You can be certain that all will be done to save your life. Doctors not involved with transplantation pronounce death only after it has been absolutely determined that there is no hope of recovery.

How will my body be treated when they remove my organs?

The organ retrieval procedure is carried out under normal operating room conditions and the body is treated with all dignity and respect.

How is it decided who will receive my organs?

Organ donation is based on the compatibility or matching of the donor and the recipient tissues, as well as medical priorities. Therefore, the person most in need and most compatible would receive your organs.

Will this process have any affect on my funeral arrangements

Funeral arrangements can proceed in a normal fashion with minimal delays.

If I donate my organs, does my family benefit financially?

Donating your organs is considered a humanitarian and altruistic act. The benefit to the family is the knowledge and comfort that a loved one, though no longer alive, has been able to offer, anonymously, new life and hope to others.

Can I change my mind?

Of course. You can change your mind at any time. Simply advise your next-of-kin of your decision, and cross your name off your organ donor card.

Is organ donation really that important?

Yes. To date there are 1,200 Canadians waiting for a kidney. Hundreds more are waiting for a cornea, heart, lung, liver, pancreas, bones and even skin. Donating

your organs is the greatest gift you can make.

Organ donor cards provided by the Pharmaceutical Manufacturers Association of Canada and Transplant International (Canada) are provided with this issue of the Journal. Δ

CDA Management Committee plays host to ADA counterparts



ADA guests posed with their CDA hosts and counterparts for this JCDA photo. They are, left to right: CDA Executive Director Jardine Neilson; CDA Past-President, Dr. John R. Robertson; CDA President, Dr. Ron J. Markey; CDA President-Elect, Dr. Jack W. Niedermayer; ADA President-Elect Dr. Arthur Dugoni; ADA President Dr. James Saddoris, and ADA Executive Director Dr. Thomas J. Ginley.

Dr. James A. Saddoris, President of the American Dental Association (ADA), President-Elect Dr. Arthur A. Dugoni and Executive Director Thomas J. Ginley, PhD visited the CDA headquarters in Ottawa in February, to hold informal talks with the Canadian Dental Association Management Committee members.

The hosts were CDA President Dr. Ron Markey, President-Elect Dr. Jack Niedermayer, Past-President Dr. John Robertson and Executive Director Mr. Jardine Neilson.

The purpose of the meeting was to informally discuss issues of common concern and CDA officials noted that the ADA list of priority items almost exactly paralleled those of the CDA.

Issues discussed included everything from infection control to insurance — Third Party issues, to relationship of the dental professionals' areas of responsibility to those of the dental auxiliaries and that of the dental general practitioners to the specialty groups.

Such a meeting has not taken place for a number of years, and was the result of



CDA President Dr. Ron Markey, left, and ADA President Dr. James A. Saddoris discovered dental priorities and concerns of both bodies were almost identical.

suggestions and invitations issued first by Dr. Bradley Holmes as CDA President in 1985 and again in September, 1986 when Dr. John Robertson, Dr. Bradley Holmes and Dr. Ron Markey visited Chicago. Since that time, the ADA has had a representative at CDA's annual Convention.

Dr. Markey and Mr. Neilson attended the 1987 ADA Convention in October, in Las Vegas. Their invitation to visit CDA in Ottawa was cordially received, and the February, 1988 date was set. Δ

Sports Dentistry Symposium scheduled in Toronto



Dr. Arthur W.S. Wood

The Sports Dentistry Symposium sponsored by the Academy of Sports Dentistry is the first to be held in Canada. It has been planned for Toronto June 24 and 25, next.

The Symposium is being co-sponsored by the Continuing Dental Education Department of the University of Toronto's Faculty of Dentistry. It is directed to all dentists, health care professionals, coaches, school administrators and educators who work in close contact with children, adolescents and adults involved with sports, and hence become directly responsible for the prevention of injuries or the emergency treatment of them.

Dr. Arthur W.S. Wood, internationally renowned for his untiring efforts to develop, produce and test protective devices for young athletes, will be chairman. Co-Chairman is Dr. Norman Levine, Professor and Head, Department of Pediatric Dentistry, Faculty of Dentistry, University of Toronto.

Subject matter

Subject matter at the Symposium will include: Legal implications of sports injuries; sports equipment, safety and testing; "Allen Average" — the head form developed to test the effectiveness of protective devices; Prevention of injuries to the mouth and teeth; conditioning the athlete; Rehabilitation; the Female Athlete; an exhibition of protective sports equipment, Ophthalmic injuries; Trauma in

the primary dentition; Trauma in the permanent teeth, and, Facial injuries.

Presenters

Presenters at the Symposium are prominent figures in the field from both Canada and the United States.

They include: Dr. P.J. Bishop, Department of Kinesiology, University of Western Ontario; Mr. S.W. Densem, a barrister; D. Hennyey, Consulting Dietitian, Faculty of Dentistry, University of Toronto; W. Maahre, RDT, Senior Lab Technician, Faculty of Dentistry, University of Toronto; L.H. Mandel, QC, barrister; R.E. Miller, ATC, RPT, head trainer, Wolverines Football Club; Dr. T.J. Pashby, Canadian Medical Association; Dr. Frank Popovich, Professor, Burlington Studies, Faculty of Dentistry, University of Toronto; Dr. Franklyn Pulver, Assistant Professor, Department of Pediatric Dentistry, Faculty of Dentistry, University of Toronto; Dr. C.H. Tator, Neurology Department, Western Hospital, Toronto; Dr. C. Torneck, Associate Professor, Faculty of Dentistry, University of Toronto.

The Academy

The Academy for Sports Dentistry was formed in 1982 by a joint effort between the Universities of Michigan and Texas, San Antonio. Its purpose is to collect and dispense information on dental and related athletic injuries, stimulate and disseminate research on the prevention of dentally related injuries in athletes and maintain a forum for those interested (dentists, physicians, trainers and coaches) to have a personal interchange of ideas relating to dentistry and the dental needs of a significant at-risk athlete population. This relatively new organization already boasts of an international membership of more than 400 members.

Dr. Art Wood, who has devoted nearly 35 years to the objectives of the Academy, is a founding Charter Member. Dr. Wood has served in recent years as the Canadian Dental Association's representative to the Canadian Standards Association, developing standards for athletes' protective equipment.

His contributions have been honored by CDA's Distinguished Service Award, the Volunteer Service Award from the Province of Ontario, a Life Membership from the Toronto Academy of Dentistry and municipal honors from his home City of Mississauga, Ontario.

Pre-Symposium course

On June 23, a participation course in fabrication of esthetic mouth protectors will be conducted at the Faculty of Dentistry, University of Toronto.

Further information is available from: Continuing Dental Education, Division of Postgraduate Dental Education, Faculty of Dentistry, University of Toronto, 124 Edward Street, Toronto, Ont., M5G 1G6. Telephone inquiries may be made via (416) 979-4503 or 979-4504. Fax: 979-4566. Δ

Strategic Planning

CDA Teaching Conference

Dr. Marcia A. Boyd, President of the Association of Canadian Faculties of Dentistry recently chaired the Conference on Strategic Planning in Toronto.

Present were representatives from the Canadian Dental Association, the National Dental Examining Board, Health and Welfare Canada, auxiliary educators, provincial dental associations and licensing bodies.

The speakers were Dr. Ben Barker who spoke on "Strategic Trends Impacting on Dentistry and Health Care"; Dr. Ed O'Neil, who gave a presentation on "The Pew National Dental Education Program as a Response to the Changing Environment"; and Dr. Larry Meskin, who spoke on "Aging America, Its Impact on Dentistry".

The Facilitator, Dr. Susan Choy, will be preparing a final report of the Conference which will be reported in the next edition of this Journal.

The initial response to the proceedings and the preliminary recommendations that came out of the Conference, were very positive.

The group indicated much interest in continuing the dialogue and plans to initiate one or two more similar Conferences on this subject in the near future.

Principal funding for the Conference was in the form of a grant from the Canadian Fund for Dental Education (CFDE). Additional funds were provided by the Canadian Dental Association. Δ

U. of Saskatchewan researchers measuring oral health levels

SASKATOON — Dental researchers at the University of Saskatchewan are measuring oral health levels in the province and identifying high risk groups. They hope, among other things, to develop better ways of improving oral health and to determine the most effective distribution of dental resources.

The work is co-ordinated through the Dental Epidemiology Research Unit, an interdisciplinary body set up recently in the College of Dentistry.

The Unit is co-ordinated by Dr. Jay Hoover, of the Division of Periodontics. Other members are Dr. Ray McDermott and Dr. Jim Tynan, of the Department of Community and Pediatric Dentistry, and Dr. David Singer, of the Department of Diagnostic and Surgical Sciences.

Dr. Hoover described the Unit as a core group "prepared to work with other researchers who are interested in epidemiology." He noted that there is a great deal of statistical data on the dental health of Saskatchewan children. However, "very little information" exists on the dental status of the general population.

"One of our current priorities, therefore, is to do a comprehensive survey of the oral health of Saskatchewan adults. This will provide base-line data against which we will be able to measure the effects of dental care services and changes in oral health," he said.

Dr. McDermott said another priority is to focus on distinct groups — for example, native people and the elderly — to uncover any differences in disease patterns.

"This should help us determine risk factors in such things as diet, attitudes, social behavior and the environment. By identifying groups with high levels of

disease, we should be better able to develop ways of improving their oral health. We should also be in a better position to see where dentists are most needed," he said.

Similarly, the Unit is giving priority to determining regional prevalences of dental disease and to pursuing research to account for any variations.

The researchers hope to collaborate with outside agencies provincially, nationally and internationally.

Drs. Hoover and McDermott pointed out that in Canada research into the epidemiology of dental disease is fragmented. They contend that a more co-ordinated approach is needed to generate comparative data.

"If we develop a good basic methodology, it may be useful to researchers in other provinces," they said. Δ

CDA Standard Treatment Plan Form

A new Treatment Plan Form, developed by the Third Party Dental Plans Committee, has been approved by the Board of Governors of the Canadian Dental Association.

Dentists may order a camera-ready copy through the CDA and have it printed by a local printer. The copy is available in English or in French and is sold for \$15. each. (Prepayment is required by cheque or Visa or Mastercard).

To order, please contact:

Suzanne Bouchard Tejeda
Administrative Assistant
Canadian Dental Association
1815 Alta Vista Drive Ottawa, Ontario
K1G 3Y6 (613) 523-1770

Your provincial dental association also has a copy of this form and may be selling it in bulk. Δ

Class Action Collections Inc.

In November and December, dentists across the country received mailings from a company called Class Action Collections Incorporated at a P.O. Box number in Kelowna, British Columbia. The mailings suggested that dentists and physicians may have overpaid taxes in previous years which may be recoverable.

The company is willing to act on behalf of those professionals signing a "Agency Agreement" for a few of 50 per cent of the tax refund, tax credit adjustment or any other form of benefit that the federal and/or provincial governments allow.

Information received from the B.C. Institute of Chartered Accountants and from an Ontario accounting firm suggest that Class Action Collections Incorporated want to refile past tax returns for various professionals claiming that monies received for providing services to recipients of Social Service benefits are not taxable. The applicable section of the Income Tax Act is Section 100(1)(f) which refers to social assistance payments made under a program provided for by an act of Canada or the provinces as apparently not taxable in the hands of the recipient, if it is received direct.

On December 22, 1987, the Department of Finance released the following information:

Social Assistance Payments

The legislation will be amended to clarify that the deduction allowed in computing taxable income in respect of social assistance payments will not be allowed to third parties, such as landlords, dentists, or others who are recipients of such payments made by governments or charitable agencies on behalf of the persons in need and who would normally include such payments in computing their rental or business income. The necessary amendments for this purpose will be effective in respect of such assistance payments received after 1981 — the date on which the existing provisions of the act relating to such payments were first made effective.

From the information received by the CDA Taxation Committee, it appears that this is not a "winning situation". The Committee strongly recommends that dentists consult with their tax advisors before signing any documents related to the Class Action Collections Incorporated proposal. Δ

Robert N. Hicks
DDS, MS
Chairman
Taxation Committee

Did you know?

More and more dentists utilize "barrier techniques". A recent Academy of General Dentistry survey of 760 dentists revealed. . .

*78.3 per cent wear gloves with all patients.

*87 per cent use protective eyewear.

*52.8 per cent wear face masks with all patients.



STANDARD DENTAL TREATMENT FORM

Approved by the Canadian Dental Association

				UNIQUE NO	SPEC	PATIENT'S OFFICE ACCOUNT NO	DATE PREPARED			THIS ESTIMATE IS VALID UNTIL		
							DAY	MO	YEAR	DAY	MO	YEAR
P A T I E N T	LAST NAME		GIVEN NAME		D E N T I S T	PHONE NO						
	ADDRESS		APT									
	CITY	PROV	POSTAL CODE									
							OFFICE VERIFICATION					

ADDITIONAL COMMENTS: Use this space to provide additional information or description pertinent to the treatment plan.

Examination: (Fees Only) _____ \$ _____

Radiographs: (Fees Only) _____ \$ _____

Other Diagnostic Service: (Total Fee Only) _____ \$ _____ +L

Oral Hygiene Instructions: (Fee Only) _____ \$ _____

Other Preventive Services: _____ \$ _____

Prophylaxis/fluoride: (Fee Only) _____ \$ _____

Basic Restorative Services:
Do not itemize surfaces, fees or teeth here. (Total Fee Only) _____ \$ _____

Surgery: (Total Fee Only) _____ \$ _____ +L

Periodontal Services: (Total Fee Only) _____ \$ _____ +L

Endodontic Services: Tooth _____ \$ _____

(Give Fee per Tooth) Tooth _____ \$ _____

Tooth _____ \$ _____

Tooth _____ \$ _____

Tooth _____ \$ _____

Anaesthetic Services: (Total Fee Only) _____ \$ _____ + Drugs

Orthodontic Services: (Total Fee Only) _____ \$ _____ +L

Other Services including Crowns, Bridges, Dentures: Itemize tooth, service, professional fee but not commercial lab charge.

_____ \$ _____ +L

_____ \$ _____ +L

_____ \$ _____ +L

_____ \$ _____ +L

_____ \$ _____ +L

_____ \$ _____ +L

_____ \$ _____ +L

_____ \$ _____ +L

Total Estimated Lab Charges \$ _____
TOTAL ESTIMATE \$ _____

THIS SECTION TO BE COMPLETED BY PATIENT

NAME _____

ADDRESS _____

EMPLOYER _____

ADDRESS _____

SUBSCRIBER

GROUP POLICY	CERTIFICATE NO	SOC. INS. NO		
PATIENT'S DATE OF BIRTH	DAY	MTH	YEAR	RELATIONSHIP TO SUBSCRIBER

I authorize the release of the information outlined in this treatment form to my insuring company or its agents

SIGNATURE OF PATIENT (OR GUARDIAN/PARENT)

L IS AN APPROXIMATION ONLY.
H FINAL LABORATORY CHARGES WILL BE INCLUDED ON CLAIM FORM.

H SERVICES MARKED (H) WILL BE PERFORMED IN HOSPITAL.

Denture-induced speech distortion can be eliminated

CHICAGO — Minor structural modifications of dentures can eliminate speech distortions that are occasionally reported by maxillary denture patients, according to Drs. Carl A. Hansen (University of Nebraska College of Dentistry) and Michael T. Singer (General Practice Residency Program, Fort Knox). Writing in a recent issue of *General Dentistry*, journal of the Academy of General Dentistry, the dental researchers report that distorted pronunciation of sibilants in patients with maxillary dentures is unlikely on its own to improve with time. Minor design changes, however, have been found to eliminate the problem.

These changes can involve adding convex palatal contours lingual to the maxillary teeth and preserving them during finishing and polishing steps in the denture fabrication process. These modifications eliminate distortion of sibilants as they are pronounced by changing the airstream that produces the distorted sound. Modifications in the airstream can be made after the denture is processed by altering the palatal contours, thus adjusting the denture to the specific requirements of the individual patient.

Production of whistling sounds by maxillary denture patients also can be reduced, by placing rugae in the course of the airstream. Similarly, some lisps can be eliminated or greatly reduced in such patients by removing rugae placed in the anterior palatal region and by reducing anterior lingual alveolar convexities.

The key to all such design modifications lies in the use of the palatogram, a graphic representation of the areas of contact between the tongue and the palate when sounds are made. Palatograms are produced by coating maxillary dentures with corn starch before insertion, and then having the patient enunciate the faulty sounds. In the process, the coated palatal surface is moistened, leaving a clear tongue print. Analysis of the tongue print determines the denture modifications needed to remove the pattern of speech distortion. Δ

CDA Retirement Savings Plan

Unit values: (Funds are valued weekly)

Fund	Unit values as at	
	February 29, 1988	January 29, 1988
<i>Fixed Income Fund</i>	61.03736	60.64067
<i>Common Stock Fund</i>	12.97507	12.45254
<i>Money Market Fund</i>	39.76837	39.53857
<i>Balanced Fund</i>	24.44631	24.06712
<i>Interest rates:</i>		
Guaranteed Fund	*Interest rates as at	
Term	February 29, 1988	January 29, 1988
1 yr	9.50%	9.50%
2 yr	10.00%	10.00%
3 yr	10.25%	10.50%
4 yr	10.50%	10.75%
5 yr	10.75%	11.00%

(*rates subject to change without notice.)

Total Assets (Market value) of the Plan as of:

February 29, 1988	January 29, 1988
\$88,688,420	\$83,634,360

For further information:



CDA RSP

Write:

CDSPI

Retirement Services Dept.
Suite 600
2 Lansing Square
Willowdale, Ontario
M2J 4Z3

or phone, toll-free:

Western and Atlantic Canada
and Ontario Area Code 807
only 1-800-268-5418
Quebec and Ontario, (except Area
Code 807) 1-800-268-3411
Metro Toronto Area . . . 497-7117

* Effective November 6, 1987 the units of the Common Stock Fund were split on the basis of 10 new units for each 1 unit held.

Did you know?

The publication *Midwestern Dentist* reports that movie stars were prey to interesting dental problems. In order to emphasize her cheekbones with a caved-in look, Marlene Dietrich had her maxillary third molars removed early in her career. Humphrey Bogart's trademark lisp and sneer were the result of a World War I wound that partially paralyzed his upper lip. Clark Gable was wearing full dentures when he made "Gone with the Wind", and most female stars, including the leading lady Vivian Leigh, refused to do close-up shots because of his denture odors.



Canadian Dental Association Convention

in conjunction with
**Alberta Dental Association
Edmonton '88**

By the time April rolls around, most of us are seriously thinking about where we are going to go for summer vacation and what we are going to do during that time. This summer offers a good opportunity for all of us to enjoy a family vacation in Alberta and also enjoy the CDA Convention in Edmonton.

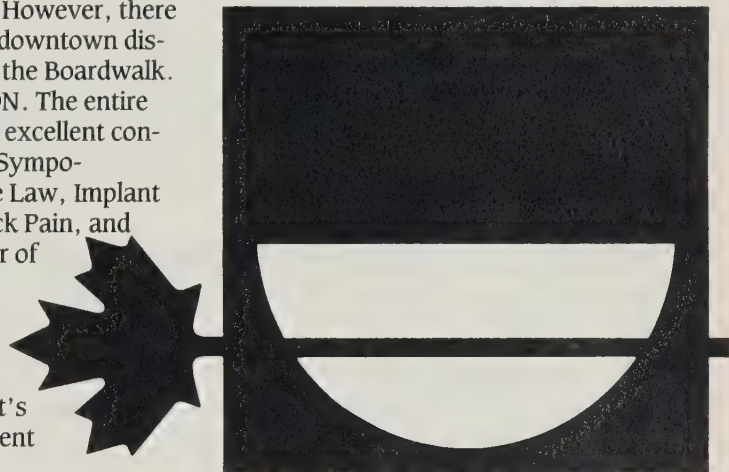
What does Edmonton have to offer you during August? Usually, the weather is warm and sunny during this time of year. For anyone east of Alberta, the Rockies and mountain National Parks are a definite attraction. Numerous areas will beckon you to come fish, hike, golf, swim, canoe, sail or raft, sightsee, or just relax and enjoy yourself. Refer to your Travel Alberta folder and don't hesitate to send in the coupon for more travel information.

During the week of August 13 to 20, the Fringe Theater group will be holding Fringe Daze in Old Strathcona. This is a very entertaining, week-long, amateur theatre production centered near the small shops and streets of Edmonton's Strathcona district. The ultimate shopping experience you will still find at West Edmonton Mall. However, there are also many wonderful shops just a short stroll from your hotel in the downtown district. You'll want to visit Edmonton Center, the new Eaton's Centre and the Boardwalk.

Of course, the major reason for your visit will be the CDA CONVENTION. The entire Scientific Program has now been finalized and it offers great variety and excellent content. There will be something to interest everyone. Topics include: TMJ Symposium, Esthetics, Front Office Personnel, Orthodontics, Dentistry and the Law, Implant Symposium, Endodontics, Practice Management, Capitation, Lower Back Pain, and Projection Clinics. These, combined with table clinics and a large number of exhibits, will make this convention the best one ever held in Alberta.

Our Social Program has been designed with one purpose in mind. We want you to leave Edmonton saying to yourself "You know, we really had a good time". That is our goal.

Read through the following pages to find more information about what's being planned, and cross out the dates August 21-24 on your appointment book now. The planning goes on and the countdown continues.



Scientific Program • CDA Convention 1988

Preconvention Courses:

Saturday August 20, 1988

Infection Control

Dr. James Cottone

Infection Control for Today's Health
Hazards in Dentistry
Room 4 Theatre Style (350)

Sunday August 21, 1988

Periodontics

Dr. William Becker,

Changing Concepts of Periodontal
Therapy
Room 4 Theatre Style (350)

Convention Courses

Monday August 22, 1988

1. K.J. Paynter Memorial Symposium

Craniomandibular Function and
Dysfunction
Room 3 Theatre Style (200)

2. Esthetics

Dr. Speer, Tacoma Wash.
Room 4 Classroom Style (270)

3. Front Office Personnel

Jennifer de St. George,
Room 8 Theatre Style (450)

4. Grieve Memorial Lecture

Dr. Roth, San Mateo, Calif
Room 6 Theatre Style (60), AM Only

5. Dentistry and The Law

Ray Purdy LLB
Attorney, CDSPI Alberta
Representative
Room 5 Theatre Style (60)

6. Projection Clinics

Room 15/16 Theatre Style (60)

7. Table Clinics

8. Spouses Program Lunch

Naomi Rhode
Say Yes to Living

Tuesday August 23, 1988

1. Implant Symposium

Surgical/prosthetic considerations
Room 3 Theatre Style (200)

2. Endodontics

Dr. B. Dolansky, Ottawa, Ontario
Room 4 Classroom Style (270)

3. Practice Management

Naomi Rhode, Phoenix Arizona
Room 8 Theatre Style (450)

4. Capitation

Dr. Ed Sauer, Houston, Texas
Room 5 Theatre Style (60)

5. Low Back Pain

Robert Sydenham, Phys Thp.,
Edmonton
Room 2 Theatre Style (260)

6. Projection Clinics

Rooms 15/16 Theatre Style (60)

7. Table Clinics

Wednesday August 24, 1988

1. Auto-Immune Deficiency Syndrome and Dentistry

Dr. Bryce Larke M.D., Edmonton
Room 3 Theatre Style (200) △

Congregate in '88

1988 CANADIAN DENTAL ASSOCIATION CONVENTION

(hosted by the Alberta Dental Association)

AUGUST 21 to 24, 1988

EDMONTON CONVENTION CENTRE

Edmonton, Alberta

ADVANCE REGISTRATION FORM

** Dentists registering by June 15, 1988 will be eligible to win a draw of 2 tickets anywhere Air Canada flies in Europe and North America (winner **must** be present at registration round-up Sunday night) Registration after June 15th, or at convention add \$25.00.

PLEASE PRINT: (one form per delegate, duplicate form if necessary)

NAME: _____
Surname First Name

ADDRESS: _____
Street/Box No. City Province
Postal Code Telephone (office) (residence)

PLEASE CHECK APPROPRIATE GROUP:

☐ Dentist ☐ Office Personnel/Staff ☐ Technician ☐ Spouse ☐ Non-dental/guest ☐ Student

PRE-CONVENTION COURSES — LIMITED ATTENDANCE (Full day courses)

Dr. James Cottone — Infection Control for Today's Health Hazards in Dentistry — Saturday, August 20

Dentists \$125.00
Office staff/other 50.00

Dr. William Becker — Changing Concepts of Periodontal Therapy — Sunday, August 21

Dentists 125.00
Office staff/other 50.00

CONVENTION REGISTRATION:

Dentists — members Alberta Dental Assoc. (due to annual levy) Nil
— members CDA/ADA (American)/foreign 150.00
— non-members CDA 225.00

INCLUDES: Exhibits, Scientific sessions, Monday luncheon

Technicians 50.00
Office Personnel (includes all dental staff) 50.00
Guest/non-dental personnel 50.00
Students Nil

ALL OF ABOVE INCLUDES: CDA Exhibits and scientific sessions

Spouses 50.00

INCLUDES: Exhibits and scientific sessions (check if will attend)
Other activities: Mon. Luncheon West Edmonton Mall ☐
Tues. Family Fun Brunch ☐
Tues. High Tea and tour Muttart Conservatory ☐

Children's Program: 15.00 x

Names and ages: _____

INCLUDES: Registration Round-up plus: (check if will attend)
Monday — Tour day and lunch (zoo, Space Science Centre, Fort Edmonton Park) ☐
Tuesday — Family fun brunch ☐

SOCIAL EVENTS: (Convention Centre)

Sunday Evening — Registration Roundup 15.00
(with world famous SHUMKA DANCERS — early bird draw 8:30 p.m.)

Tuesday Evening — WESTERN NIGHT — Limited attendance (per person) 38.00

Monday Noon — CDA/ADA INAUGURAL LUNCHEON — Dentists only — If will attend check ☐ Nil
(After June 15th add \$25.00)

TOTAL

IMPORTANT: Make cheques payable to "Canadian Dental Association Convention".

Mail to: Canadian Dental Association

1988 CANADIAN DENTAL ASSOCIATION CONVENTION 1815 Alta Vista Drive Ottawa, Ontario K1G 2Y6

CANCELLATION POLICY: Cancellations received before August 1st, full refund. Cancellations after August 1st subject to a 25% administrative charge.
No refunds after August 15, 1988.

1988 CANADIAN DENTAL ASSOCIATION CONVENTION

(hosted by the Alberta Dental Association)

AUGUST 21 to 24, 1988

EDMONTON CONVENTION CENTRE

Edmonton, Alberta

HOTEL RESERVATION FORM

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☐ Mr. Address _____
☐ Mrs. _____
(City) (Province) (Postal Code)
☐ Miss/Ms Telephone: _____ (Res) _____ (Bus.)

TYPE OF ROOM

☐ Single ☐ Double ☐ Twin ☐ Other _____

INDICATE FIRST THREE HOTEL CHOICES (Rates indicated single/double)

☐ Westin Hotel (C.D.A. Headquarters)	\$ 95.00
☐ Chateau Lacombe (C.D.H.A. & C.D.A.A. Headquarters)	65.00
☐ Ramada Renaissance (Exhibitors & Technicians Headquarters)	65.00
☐ Four Seasons	88.00
☐ Sheraton Plaza	69.00
☐ Holiday Inn	56.00
☐ Fantasyland Hotel (Theme Room Only)	175.00
☐ Centre Suite	65.00
☐ Tower On the Park	☐ 1 Bdrm - \$55.00 ☐ 2 Bdrms - \$70.00 ☐ 3 Bdrms - \$85.00

Deluxe rooms are available upon request. All hotels are within walking distance from the Convention Centre except Fantasyland Hotel and Tower On The Park.

Arrival Date: _____ Time: _____ Departure Date: _____

DEPOSIT: A \$75.00 deposit is required to guarantee the accommodation. Please make cheque payable to:
THE EDMONTON CONVENTION AND TOURISM AUTHORITY

— OR —

VISA # _____ MASTER CARD # _____

AMERICAN EXPRESS # _____ OTHER _____

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9797 JASPER AVENUE NO. 104
EDMONTON, ALBERTA, CANADA T5J 1N9

DEADLINE FOR RESERVATION: July 4, 1988, thereafter requests will be accepted on a room availability basis only. Rooms elsewhere are being held and will be assigned for those persons whose reservation requests are received after the allotment is consumed.

* * * PHONE RESERVATIONS WILL NOT BE ACCEPTED * * *

CANCELLATION POLICY: DEPOSIT REFUNDABLE UP TO 60 HOURS NOTICE.

* * * CONFIRMATION WILL BE SENT DIRECTLY FROM THE HOTEL * * *

Dr. Hal Leyland

Dental update from the Bahamas

The jovial and energetic former Canadian (Toronto) dentist Dr. Hal E. Leyland, who later moved to the Bahamas and did much to extend dental services to people in underserved areas there, is still very active in dental and community circles, although retired since 1985.

A University of Toronto graduate, Dr. Leyland began, early in his career, to combine his enthusiasm for service club work with projects which extended dental services to those who rarely if ever, would have access to them.

When he established his practice in the Bahamas in the early 1960s, he organized the Kiwanis there. The Nassua club has the distinction of being the first to be established outside of continental North America.

And his influence in fostering Kiwanian sponsorship of dental projects continues.

Recently, Dr. Leyland conducted a day-and-a-half-long seminar for a group of dentists and their wives at a Bahamian resort area. Two major subjects were discussed in the group, most of them from Florida:

- Practising dentistry in a Third World country where there is no income tax, no malpractice insurance and never any harassment from any organization, dental or otherwise;
- The establishment of a community dental service program on a volunteer basis, sponsored by a Kiwanis Club, in one of the Family Islands, 700 miles southeast of Nassau. (This clinic is now run by the government, but Dr. Leyland ran it alone for 10 years (1964-74). It was non-profit but self-sustaining, without help from the government.)

The extent to which Dr. Leyland became integrated into Bahamian society and community affairs is in part exemplified in the accompanying photograph. He has been a reserve police officer with the Royal Bahamas Police Force for more than 21 years. He is pictured in his police uniform.

Canadian connections

He has maintained close contact with Canadian dental colleagues and the Canadian Dental Association throughout his career in the Bahamas.

He recently provided some notes about three Bahamian-born dentists, graduates of Canadian dental schools, who are "faring well in the Bahamas."

Dr. S.T. Sweeting, who graduated from

McGill University in 1963, is President-Elect of his Rotary Club, the largest and most active of the five clubs in the Bahamas, and is also a shareholder at Doctors Hospital, the largest private hospital in the Islands. He also served for some time on the Dental Advisory Board on Qualifications, to the Government, and is a past president of the Bahamas Islands Dental Association.

Dr. Vaughn Conliffe is also a McGill graduate (1985), who succeeded Dr. Leyland at Nassua's Dental Health Centre, when he retired, June 27, 1985. The practice presently consists of four dentists, three hygienists and 10 auxiliaries.

Dr. Anthony Davis, a University of Toronto graduate (1972), provides services to people in central Eleuthera, flying back and forth in his own aircraft, and also conducts his own private practice. He is well-known as an accomplished squash sports enthusiast. He served several years as Chairman of the Dental Advisory Board and also is a past president of the Bahama Islands Dental Association.

Another McGill graduate, Dr. E. Paul Albury (1952), recently passed away. He was well known for his historical writings. Dr. Albury wrote two world-renowned books on Bahamian history and was the founder and longtime president of the Bahamas Historical Society. He was a past president of the Bahama



Islands Dental Association and a Fellow of the International College of Dentists (Canadian Section).

More honors

Dr. Leyland, who sold his practice to a Bahamian-born Loma Linda dental school graduate, was installed as a Fellow of the Academy of Dentistry International in Miami in 1986. He has also been named to organize a new Caribbean Section of the Academy.

He is a Life Member of the Canadian Dental Association and the Bahama Islands Dental Association, and reports that he is an avid reader of this Journal. △

May 12, 1988 is Canada Health Day

The Canadian Dental Association joins other health care organizations across Canada to celebrate Canada Health Day, on May 12 next.

The annual event is sponsored by the Canadian Hospital Association and the Canadian Public Health Association.

May 12 commemorates Florence Nightingale's birthday.

The Canada Health Day theme this year is "Health for All: All for Health." It was chosen in recognition of the efforts of the World Health Organization in promoting health for all. △

Dental Awareness Program Update

It's Dental Health Month Keep Smiling!

In the Office. In the community. At home. Everywhere. This Dental Health Month the focus is on making Canada smile.

It's a warm and positive approach to dental health that our patients are sure to relate to, and that we can enjoy transmitting. And, as you know, we have *Bob*, *Keep Smiling* and the *Five Point Prevention Plan* to help out.

Put the *Keep Smiling* message to work. . .

in your office

Commit to having your patients leave the office smiling. It's simple. A friendly greeting and an upbeat environment featuring plenty of the *Keep Smiling* materials is all that it takes. And, if you haven't already been doing so, why not answer the phone by saying *April is Dental Health Month, Keep Smiling!*

in your community

Take the *Keep Smiling* message everywhere that you go this April. Wear a button. Put a bumper sticker on your car. Help your local organizer to get the message onto the radio, into a newspaper, or set up a booth at the mall. Keep spreading the good cheer — and *Keep Smiling!*

Bob's a hit!

Bob and his host of bright, upbeat and engaging materials make up the widest selection of items that we have ever created. Together with *Keep Smiling* and the *Five Point Prevention Plan*, they are a hit.

The order section at the Canadian Dental Association can barely keep pace with the orders that are coming in — from dental offices, community organizers, and provincial associations — clearly dentistry is more united than ever before!

And remember, these messages will carry on long after dental health month has ended. The *Plan* and *Keep Smiling* are going to become an integral part of the CDA's on-going awareness program *Dental Health: Good For Life*. It's time to get our patients committed to dental health year round.

Running out of the Keep Smiling posters, buttons or stickers, or any of the CDA's other patient education materials?

Write or phone your orders into:

Order Section
Canadian Dental Association
1815 Alta Vista Drive
Ottawa, Ontario
K1G 3Y6
613-523-1770
Telephone orders accepted with VISA or Mastercard only.

The Checkup is moving to September

As part of the CDA's initiative to promote patient education year round, the *National Dental Health Checkup* is moving to the fall.

For the past three years, the *Checkup*, a bright, 12-page publication featuring test-yourself questions and answers about dental health has been featured in the May edition of *Chatelaine*. It's proven to be a successful and high profile event reaching over 4 million Canadians annually.

The move to the fall will add momentum to the CDA's on-going public awareness

efforts. It will bring increased public exposure and continuity to the *Good For Life* message — keeping dental health in the public's eye.

Copies of the first three *Checkups* are still available from the order section at the CDA (address above). They are an excellent educational aids and give-aways for your patients — keep a healthy supply on-hand in your office.

Keep Smiling ads set for launch in May

Print ads featuring *Keep Smiling* and the *Five Point Prevention Plan* have been developed by the CDA. In place of the *Checkup*, they are set to run in the May issues of *Canadian Living*, *Coup de Pouce* and *Time*.

Space for the ads has been generously donated by Colgate-Palmolive to help the CDA with its launch of the Plan this month, Dental Health Month. The ads are sure to convey a positive dental health message to Canadians nationwide. *Watch for them!*

First Teeth takes off

Orders for the *First Teeth* program keep pouring in.

To date 10,000 first orders for *First Teeth*, the CDA's new program for parents of children up to age 9, have been received from dental offices across Canada — doubling estimated requests after only 6 weeks!

We thank you for your interest in the program and hope that you share our pride in the quality of the materials. The invaluable contributions of leading specialists in children's dentistry, and a host of parents and children, have helped to create an exciting and important new *Dental Awareness Program* resource.

We apologize for any delays that you may be experiencing in receiving your materials. Your overwhelming response has caused minor slowdowns in the fulfillment process — if you have ordered, but haven't already received your *First Teeth* office kits, be certain that they will be arriving soon.

Again, thank you for your participation. Δ





Dr. Arlington Dungy

Dr. Arlington Dungy, who is Chief of the Dental Department at the Children's Hospital of Eastern Ontario, in Ottawa, has been accorded an unusual honor.

He was recently named as Vice-President of Medical Affairs and Allied Health Service at his hospital. The appointment recognizes Dr. Dungy's personal ability as well as the respect dentistry is gaining in the medical world.

Since he joined the Children's Hospital staff in 1981, Dr. Dungy has developed a department which has earned the respect of both the dental and medical community. Last year he was named Chairman of the Medical Advisory Committee, a first for a dentist in Canada. This most recent appointment is unprecedented.

A graduate of the University of Toronto in 1956, Dr. Dungy did post graduate work in anaesthesia in Britain in 1966 and completed his training with graduate studies in paedodontics in Toronto in 1967. He was the first director of the dental program for handicapped children at the McMaster University Medical Centre, Hamilton, Ontario, and then, before his Children's Hospital appointment in Ottawa, was Chief of the Division of Paedodontics at the Children's Hospital in Toronto. △

The FDA has approved an AIDS vaccine study at six medical research institutions in the United States.

The vaccine uses genetically engineered protein from the outer coat of the AIDS

virus. This was developed by MicroGene-Sys Inc., a biopharmaceutical firm in West Haven, Connecticut. The purified protein is a copy of a piece of the virus, but it is not infectious and will not cause AIDS.

Test centres include the Johns Hopkins School of Public Health, the University of Maryland, the University of Rochester (N.Y.) School of Medicine, Marshall University School of Medicine Huntington, West Virginia, Baylor College of Medicine, Houston, Texas, and Vanderbilt University, Nashville, Tennessee.

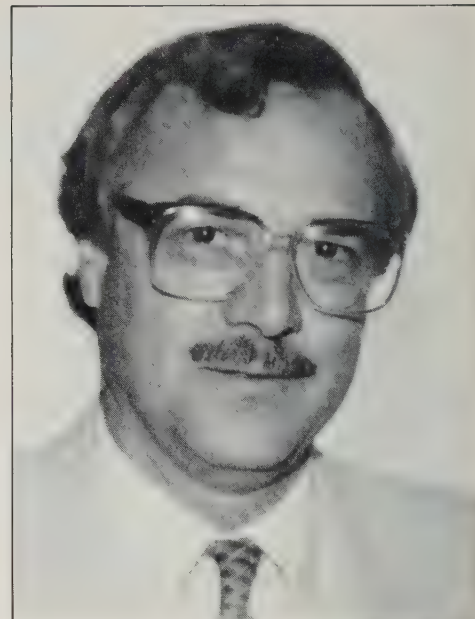
Each of the six federally-funded centres sought 12 to 20 men and women for Phase I of the study-testing the vaccine's safety and ability to stimulate the immune system.

If results warrant, Phase II trials would concentrate on dosage and the number of injections a person can receive. The first two phases are expected to take at least two years.

If the results continue to hold promise, Phase III studies would be initiated to determine whether the vaccine really protects high-risk people from acquiring the HIV virus. △



Dr. Gilbert E. Utas of Grande Prairie, Alberta (right) receiving the University of Alberta Dental Alumni Association's Outstanding Achievement Award for 1987 from the Dental Alumni Association President, Dr. David A. Scott. Dr. Utas is a Past President of the Alberta Dental Association and the Canadian Dental Association, and is the President of the Pacific Dental Federation. The presentation was made during the joint convention of the Alberta Dental Association and the Pacific Dental Federation in 1987. △



Dr. William Christie

At the recent annual meeting of the Canadian Academy of Endodontics, Dr. William Christie of Winnipeg, was elected President for 1987-88.

Other executive members elected at the meeting are: President-elect — Dr. Lorne Chapnick, Toronto; Treasurer — Dr. Carl Hawrish, of Edmonton, and Executive Secretary — Dr. John Phillips, of Oshawa, Ontario.

The 23rd annual meeting of the Carl O. Boucher Prosthodontic Conference is scheduled in Columbus, Ohio, April 22, 23.

One of the featured speakers on the program will be Dr. W. Brock Love, Professor of Prosthodontics, Faculty of Dentistry, University of Manitoba, whose presentation will be: "The Realities of Denturism."

Other speakers scheduled are: Dr. Gerald Niznick — "The Core-Vent System"; Dr. John A. Sorensen — "Minimization of Plaque, the Key to Esthetic Crowns"; Dr. Robert A. Strohaber, — "Murphy's Law and Complete Dentures"; Dr. William J. Pagan — "RPD Design: Theory and Practice", and presentations by graduate students in the Ohio State University College of Dentistry's Advanced Prosthodontic Program.

A table clinics session and reception will be held the evening of April 21. For further information contact: Conference Secretary Dr. Ernest Svensson, c/o the OSU College of Dentistry, 305 West Twelfth Ave., Columbus, Ohio, 43210. △

BOUCHER'S "PROSTHODONTIC TREATMENT FOR EDENTULOUS PATIENTS" 9TH EDITION

Edited by J.C. Hickey,
G.A. Zarb & Charles L. Bolender

*C.V. Mosby Company
Toronto, Ontario
Price: \$64.00
Pages: 646*

Written by internationally known prosthodontists, this fully comprehensive text provides complete coverage of prosthodontic treatment for edentulous patients. Certainly, the addition of Dr. Bolender to the editors for the 9th edition has greatly influenced the content of this text. The design and color of the cover and the format size of the paper have changed from previous editions. The text provides both dentists and dental students the necessary background needed for successful treatment of their patients.

This organized textbook has five sections. Some of the chapters have a reference list at the end. However, additional reference material is found at the end of the text which is an excellent source of information for those interested in specific topics. The first section represents the biomechanics of the edentulous state and tissue response to complete dentures.

Section Two deals with diagnosis and treatment planning for patients with some remaining teeth and patients with no teeth remaining.

Section Three presents the basic treatment procedure for completely-edentulous patients. In this section biological consideration of maxillary and mandibular impressions are well described. In this section various procedures and methods of making impressions are well presented which is the strongest point of this text.

Section Four presents for rehabilitating partially-edentulous patients with special complete dentures, such a tooth-supported denture (overdenture), immediate denture, and single complete denture opposing natural dentition.

Section Five presents with supplemental prosthodontic procedures which includes relining, rebasing and repairing complete dentures. Chapter 30 of this section presents alternative treatment methods for edentulous patients. This chapter very briefly but effectively describes and illustrates the osseointegrated implant technique for rehabilitation of completely-edentulous patients.

I highly recommend this text to be the standard textbook for undergraduate students. In addition, it is an excellent source for practitioners who are interested in complete denture prosthodontics. Δ

*This book was reviewed by:
Dr. Nasser Dibai
Faculty of Dentistry
McGill University
Montreal, Quebec*

BLEACHING TEETH

R.A. Feinman, R.E. Goldstein,
D.A. Garber

*Quintessence Publishing Co., Inc. 1987
Chicago, Ill, 102 pages*

The need for a comprehensive text on the subject of bleaching of the teeth has been unfilled for a number of years. With growing numbers of dentists who have tried bleaching or would like to attempt this mode of treatment, this technique manual and reference guide will prove very useful.

The material is presented in a logical, sequential fashion. A historical overview is followed by a section on diagnosis and evaluation. Next the materials and the armamentarium are shown in detail. Finally, there is a step-by-step technical demonstration that will allow even those totally unfamiliar with bleaching to undertake their first cases.

The book's format, relying heavily on pictures and diagrams, is appropriate both to the subject of bleaching and to the practitioner who has a limited amount of time to spend on absorbing new techniques. The explanatory notes are concise and direct. Colour highlighted boxes throughout the text succinctly summarize

various sections for a better understanding of the subject.

The three appendices towards the end of the book offer a cookbook style procedural formula for treating each of the three major categories of staining, from diagnosis to final polishing. These instruction sequences are possibly the most valuable parts of this text.

It is unfortunate that the authors chose to use different types of film for most of the "before" (Kodachrome) and "after" (Ektachrome) pictures. True comparisons can be made only when using identical films before and after treatment. In this text, the untreated teeth are photographed with Kodachrome, whose orange hues make the "before" teeth look darker and more stained. Most of the "after" pictures were taken with Ektachrome, a film that is more blue-white in tone, and one that makes the teeth look brighter than they actually are. The overall result is an enhanced visual effect and not a true measure of the value of bleaching.

The acceptance of bleaching as a treatment modality will be positively influenced by the appearance of this book, and it is recommended to all dentists who are presently incorporating bleaching into their practices or are intending to do so. Δ

*This book was reviewed by:
George A. Freedman, DDS
Vice-President,
American Academy of Cosmetic Dentistry*

CONCISE ILLUSTRATED DENTAL DICTIONARY

F.J. Harty and R. Ogston

*Wright, Bristol 1987
ix + 291p.*

Author F.J. Harty writes that the Concise Illustrated Dental Dictionary was planned for "dental surgery assistants" but was "expanded to meet the needs of dental surgeons, students . . . and also the auxiliary dental and secretarial staff on whom the profession relies to form an efficient dental team". Although it is a slim volume when compared to other

dental and medical dictionaries, the work probably has achieved its objective.

Frequently used dental terms are presented and considerable attention is paid to appropriate and important medical words, phrases, diseases, eponyms and acronyms. The medical entries are up-to-date (AIDS and HTLVIII virus), and, for all entries, discussion beyond a simple definition is provided when needed.

As expected in a work designed for United Kingdom users, the British influence is apparent. British spellings are used, but this should cause no problems for the Canadian reader. A minor irritant is the use of U.K. trade names when drugs are presented.

Particularly informative and valuable are the 16 appendices to the dictionary: SI Units, Conversion Tables, Reference Citation and Journal Abbreviations, Proof Correction Marks, and Radiographic Technique and Anatomy are especially well done, although their usefulness for dental auxiliary personnel is question-

able. Appendix 15, Addresses of Selected Dental Schools, is flawed by the omission of U.S. schools.

A critical reviewer can find fault with any written work and it is appropriate to mention some specific shortcomings of this dictionary. With occlusion-related disorders and their treatment becoming common today, it is surprising to see the absence of any references to occlusal interferences or supracontacts, myofascial pain, bruxism or parafunction. The description of the action of the two heads of the lateral pterygoid muscle is passé. The orthodontist may take issue with anterior tooth alignment in the drawing of the Class II, Division 2 malocclusion. The definition of Angle's Classification needs elaboration. Readers interested in other clinical disciplines will have similar concerns about the language of their specialties.

A major fault in the dictionary is the absence of phonetic pronunciation guides. In order to communicate in the profession, one must be able to speak the lan-

guage properly in addition to reading and writing it.

Concise Illustrated Dental Dictionary is most suitable for use by ancillary dental personnel, particularly those who live and work in the U.K. Although "reading" it was enjoyable and informative, I wouldn't buy it. I'd opt for something more comprehensive and more North American. Δ

This book was reviewed by:
R.D. Oles, DDS, MS
College of Dentistry,
University of Saskatchewan

COLOR ATLAS OF HISTOLOGY

Finn Geneser

Munksgaard Int. Publishers
Copenhagen, Denmark
231 Pages, \$33 U.S.

"Color Atlas of Histology" by Finn Geneser and edited by Munksgaard is a well organized atlas covering all essential topics in general histology. As such it is well suited for medical, dental and undergraduate students. The photo-illustrations are of excellent quality and stain colors are naturally reproduced. Figure legends, however, are very short and basically only name the structures and state the enlargement and stain used.

Despite the author's introductory comments, I feel that this atlas would benefit greatly from expanded figure legends. It would thus not only serve as a road map for finding and identifying structures, but also as a teaching aid putting in perspective essential points and helping the student refresh and retain them. Δ

This book was reviewed by:
Dr. Antonio Nanci
University of Montréal
Dept. of Stomatologie

"TOURMENTES — LES COULEURS DU RÉVEIL"

Christiane Mascrès

Les Éditions Compton,
Compton (Québec) J0B 1L0
102 pages, 12,95 \$

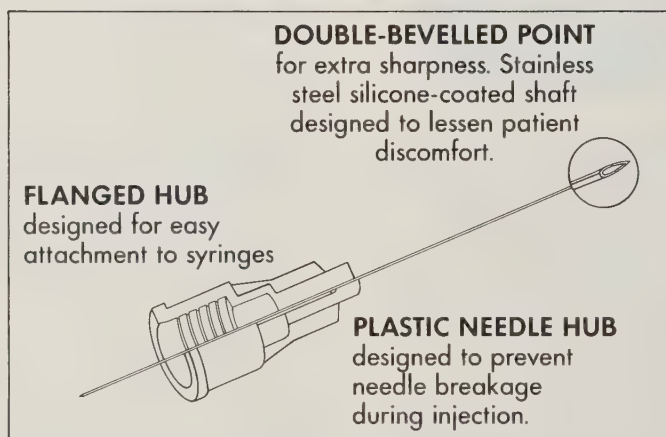
Née à Paris (France), Christiane Mascrès est dentiste et professeur à la Faculté de Médecine dentaire de l'Université de Montréal. Après "Tellement d'adieux", elle vient de publier aux éditions Compton (PQ), son deuxième recueil de poèmes, intitulé "Tourmentes", suivi de "Les couleurs du réveil".

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Obituaries/ Nécrologie

Condon, J.F.: A graduate in dentistry from Dalhousie University, in 1942, Dr. Condon maintained a private practice in Truro, Nova Scotia.

Downton, E.: Dr. Downton was a graduate of the University of Toronto in 1944. He conducted a private dental practice in Cobourg, Ontario. He was a Life Member of the CDA.

Harper, Stanley: Born in 1899, Dr. Harper graduated in dentistry from the University of Toronto in 1924. He practised for 50 years at Mount Dennis, Ontario. He was a Life Member of both the CDA and the ODA.

Lessard, Pierre: Diplômé de l'Université de Montréal en médecine dentaire en 1969, le Dr Lessard pratiquait à Thetford Mines, Québec.

Simmons, Hamilton E.: A graduate in dentistry from the North Pacific College, Oregon, U.S.A. in 1929, Dr. Simmons was a native of Winnipeg. He conducted a practice in Vancouver, B.C.

Somerville, Donald A.: Dr. Somerville graduated in dentistry from McGill University, Montreal, in 1925. He conducted a private practice in Bristol, New Brunswick. He was a Life Member of the CDA.

Tackaberry, W.J.: Born in 1899, Dr. Tackaberry was a graduate of the Royal College of Dentists, Toronto, in 1924. He practised in Owen Sound, Ontario and was a Life Member of the CDA.

Vincelli, John: Born in 1924, Dr. Vincelli graduated in dentistry from McGill University, Montréal, in 1951. He maintained a private practice in Westmount, Québec.

Écrire est pour l'auteur sa seconde nature. Ses poésies, ni prose ni vers, balancées à petites touches, valent par la justesse des mots. Mots qui expriment une tendresse pure dense et intense par son goût de la beauté, et qui réfléchit, comme un miroir, un camaïeu d'émotions.

Est-ce une poésie triste?

Sans doute. . . Mais cette tristesse est consentie, savourée, pastel et jamais grise. Qui ne se prend pas au sérieux, avec comme garde-fou une pointe d'humour-pirouette. Une tristesse qui a fait alliance avec la solitude. Sa solitude, réalisée, l'auteur l'habite bien. Comme une mer, avec une lenteur de temps particulière, une chaleur — plénitude où s'ébrouer, consacrée seulement à l'émerveillement du quotidien. Solitude sereine, acceptée, dans l'amour et dans sa quête.

Son alliance sensuelle et pudique avec les animaux, avec les choses de la terre, intimes par un transfert magique de sentiments, nous laisse à mi-chemin entre fable et berceuse. Rejet du réel, humilité devant le destin accepté ou choisi.

Des poèmes tendres où chaque vent trouve son grain à destination rêve. Le goût du rêve. . . Avec en transparence le battement de la désespérance. △

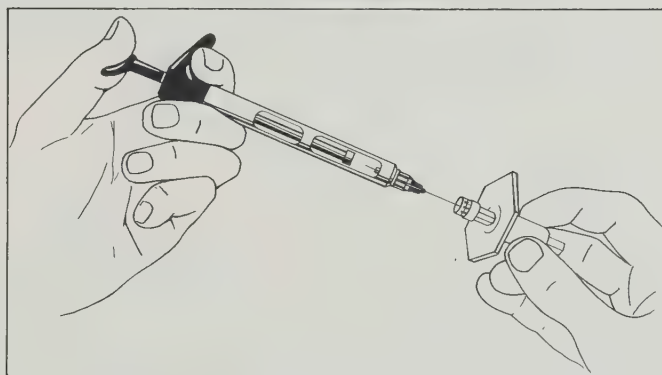
Livre revu par:

Dr Pierre Desautels et commentaires basés sur la préface du livre.

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Cosmetic Dentistry

La chirurgie dentaire esthétique

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One copy of the above articles is available at no charge from the library to all CDA members. Non-members will be charged \$5.00. This bibliography was generated with the help of MEDLARS, a computerized information retrieval system for the Health Sciences field, which has been operational in the library since February 1982.

La bibliothèque de l'ADC offre gratuitement à ses membres et pour \$5.00 aux non membres une copie des articles au-dessus. Cette bibliographie a été préparée avec l'aide de MEDLARS, un système informatisé de recherches bibliographiques pour les sciences de la santé. Ajouté à la bibliothèque en février 1982.

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Computer software article 'has shortcomings'

*RE: SYSTEM SOFTWARE by
David M. Kogon.

Setting up a Consumer Reports type article on dental software is an excellent approach for comparative purposes. Consumer Reports Magazine have done it for years and although some bias may show through, the reports are factual and thoroughly researched by numerous technical staff. The article by David Kogon has many unreasonable shortcomings. By admission in the article the "testing" of the system was one year past, which, in a rapidly changing field, is useless.

The article is seriously flawed as the DOMTRAK system:

- 1) has always had a rapid search procedure based on any number of letters in the last name.
- 2) is a true multi-tasking, multi-user system using Xenix. Offices can begin with an inexpensive MS-DOS system and easily expand later to the multi-user XENIX system without hardware or data changes.
- 3) laser option is available.
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- 5) Dunning letters are integrated.
- 6) Collection by type and provider, including hygienists, are reported daily.
- 7) Bank deposit forms are produced.
- 8) Lab reporting is done daily and always has been.
- 9) DOMTRAK has 30 users of the Dental system and 28 more offices with an optometric package (based on the dental system).
- 10) Function keys now make all screens and exits consistent.
- 11) Having alpha characters in the phone number field is useful for words like exten., mobile, FAX or even a dash in the number.
- 12) The system was originally established in 1981 and DOMTRAK has been at the ODA convention for 4 years. The system is proven and logical in the real world and is being enhanced from user input. DOMTRAK is a true Canadian system which internally splits the new ODA packaged codes.

The people who know any system best are the receptionists who run them daily. Use them as consultants. Δ
Ross MacKillop, BSc, DDS

*JCDA Vol. 54, No. 2 p. 93-99

"Country needs more freedom"

I wish to express my opposition to some parts of the CDA policy on Tobacco Products and Health. Specifically, I am concerned about articles #1: "The Canadian Dental Association applauds government's efforts to ban all advertising and promotion of tobacco products.", and #7: "CDA urges the prohibition of exporting tobacco and tobacco products, especially to Third World countries."

While I am not a smoker, I believe that individuals should be free to make their own choices and to transact freely with each other. This includes advertising if they wish to (as should those dentists who feel the need to advertise). Our role as health professionals should be to inform our patients, not to encourage government coercion. Those patients who are rational are interested in remaining healthy.

A mixed economy like ours with its strong socialist elements invariably leads to more restrictions upon individuals. After all, we tend to feel that since we pay for the medical care of our fellow citizens, we should also have the power to prevent them from doing things which would harm their health. The obvious question is — where does the government's power to enforce the majority's will, stop? Should we ban sugar sales and advertising? How about alcohol, eggs and butter etc.? How would you feel about more restrictions on the practise of dentistry?

Taken to its logical conclusion, your attitude (and that of most Canadians) can only lead to a collectivist totalitarian nightmare.

Please, Board of Governors stick to minding the dental store and trying to protect us from being the politicians' next sacrificial lamb. This country needs more freedom not less. Δ

J.M. Vincent, DDS
Ottawa, Ontario

Dr. Markey responds. . . .

As Chairman of the Executive Council of CDA, I am writing in response to your letter of January 5 addressed to the Board of Governors concerning the CDA Policy on Tobacco Products and Health.

I was interested in your opinions on this issue, but cannot agree that the national dental association should restrict its areas of concern to the "dental store". As you

so rightly point out, dentists are health professionals.

The Canadian Dental Association is a national health organization which is the national voice of these professionals on material issues. As such, it is important that its focus be the overall health and welfare of Canadians and not solely their oral health, although the ill effects of tobacco use on the oral cavity alone are well-documented. To do otherwise would serve to lessen the credibility of the professional association in the eyes of both the general public and the membership.

If you do not wish to support the proposed legislation, that is a personal decision which I respect.

Thank you for your interest in, and comment on, this issue. Δ

Ron J. Markey, DDS, MSD
President

Error in article

The article in the January, 1988 issue on Lorazepam sublingual contains an error with potentially serious consequences. The dose is specified as 0.5 mg/kg, rather than 0.05 mg/kg, as listed in the CPS. Δ

B.D. Read, BSc, PhD, DDS
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CFDE

TWENTY-FIVE YEARS



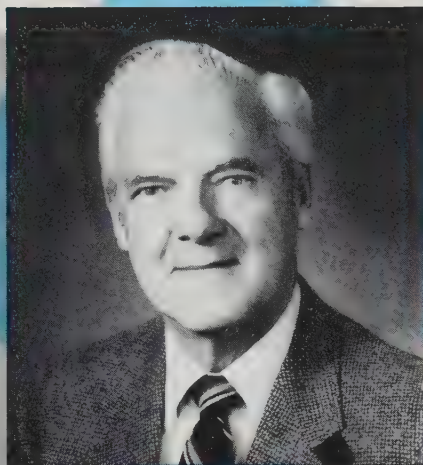
FCED

VINGT-CINQ ANS



"It is with mixed feelings that I write my final annual report as Chairman of the Canadian Fund for Dental Education.

Although I have greatly enjoyed my association with the Fund over the last eight years, I am looking forward to passing the gavel in 1988 to my very capable colleague, Dr. Ted Ramage, of Vancouver, who will do an outstanding job leading CFDE."



C'est avec une certaine nostalgie que je vous présente mon dernier rapport en tant que président du Fonds canadien pour l'enseignement dentaire.

Si j'ai grandement apprécié d'avoir travaillé pour le Fonds au cours des huit dernières années, il me fait cependant plaisir, en 1988, de remettre les rênes du Fonds à mon très compétent collègue, le Dr Ted Ramage, de Vancouver, qui, j'en suis sûr, se montrera à la hauteur de la tâche.

It was especially heartening for me to be closely involved with the Fund in the year of its 25th anniversary. As I had hoped, it was indeed a banner year in many ways, the details of which are contained below. Not only has income increased dramatically, but CFDE is funding more and more interesting projects, to the benefit of the entire dental community. I have received, during this past year, countless letters of appreciation and praise for what CFDE is doing to further dentistry in Canada.

1987 Awards Granted

A total of \$166,024 was approved for many varied projects during the year, some of which deserve special mention, be it for their magnitude, innovation, or simply their attempt to make the Canadian public more aware of the need for dental care. I do not, however, intend to sing the

praises of the projects CFDE funded this year. I will let those who benefitted directly from these funds tell their stories, as passed on to me.

By far CFDE's largest single project is the joint Canadian Fund for Dental Education/ Association of Canadian Faculties of Dentistry Summer Teaching and Management Institute. In 1987, \$35,000 was granted to ACFD to run two concurrent institutes to train dentists to teach and dental Division Heads and Department Chairpersons to manage. The results were phenomenal:

"Some 35 educators from all ten Faculties of Dentistry attended the two institutes. (. .) I arrived very jaded but left rejuvenated. (. .) The existence of the Institutes and their sponsorship by organized dentistry, to the best of my knowledge, is unique to this country. I am confident the benefits will be felt not only by the

J'ai trouvé cela fort encourageant que de participer étroitement aux activités du Fonds en l'année de son 25^e anniversaire. Ainsi que je l'avais souhaité et comme on le verra plus loin, ce fut une année vraiment remarquable. Non seulement les revenus ont augmenté considérablement, mais aussi le FCED a financé en plus grand nombre des projets toujours plus intéressants, pour le mieux-être de toute la profession. Au cours de la dernière année, j'ai reçu un très volumineux courrier de félicitation et d'encouragement pour les services que le FCED rend à la médecine dentaire au pays.

Les bourses de 1987

En 1987, le Fonds a distribué la somme de 166,024 \$ et les projets ainsi subventionnés ont été plus nombreux et plus variés. Sans les passer tous en revue, j'aimerais cependant en souligner quelques-uns qui méritent une attention particulière à cause de leur ampleur, de leur caractère

inédit ou des efforts qu'ils ont comportés pour sensibiliser davantage la population canadienne à l'importance des soins dentaires; et pour ce faire, je ferai appel au témoignage des bénéficiaires eux-mêmes.

Les cours d'été en enseignement et en gestion, offerts conjointement par le Fonds canadien pour l'enseignement dentaire et l'Association des facultés dentaires du Canada, ont été de loin le projet le plus important subventionné par le FCED. En 1987, l'AFDC a ainsi reçu la somme de 35 000 \$ pour organiser deux cours simultanés, l'un pour former des dentistes à l'enseignement et l'autre, pour former à la gestion des chefs de division ou de département. Le résultat fut extraordinaire.

" Quelque 35 professeurs des dix facultés de médecine dentaire ont participé aux deux cours . . . J'étais assez naïf quand je suis arrivé et j'en suis reparti tout rafraîchi . . . Ces cours et leur parrainage par les organisations dentaires sont, à ma connaissance, quel-



Faculties but by the whole dental profession.”

“I am thrilled that dentistry seems to have recognized the value of teaching teachers of professionals how to teach. I predict that, in the future, the dental profession will lead other professions such as medicine, law and accounting in this regard.”

This “very worthwhile investment of CFDE funds” . . . will lead to “increased productivity, better communications within departments, more efficient time management, and more facilitated faculty development.”

The following quote, I believe, says it all:

“I have been teaching now in dentistry for eight years, yet I learned more these past nine days than I'd learned up to that point.”

The Fund is seriously committed to a program which engenders such praise from its participants. We are all indebted to its coordinator, Dr. John Eisner of Dalhousie University and to Drs. David Chambers of University of the Pacific, Bruce Squires, University of Western Ontario and Richard Lewis, University of Windsor, who provided the outstanding instruction.

Another area in which CFDE spends a large proportion of its money is in individual fellowships to graduate students who plan to return to a Canadian Faculty of Dentistry to teach or do further research.

“Getting enrolled in a post-graduate program is not an easy task and presents greater expenses than many would think. The

support I have received from your organization was more than welcome and well utilized. (. .) I understand now, more than ever, the necessity of having a “CFDE”.

CFDE funds also allow talented young dentists to have their research internationally recognized.

“I wanted to inform you that my abstracts that I submitted to the International Association for Dental Research and to the American Association of Endodontists were both accepted for presentation. (. .) They will both be published in the corresponding journal for each association (. .).”

CFDE is also helping support education-related research being carried out by Dr. Arto Demirjian at the Université de Montréal. Dr. Demirjian is developing an interactive videodisc of Dental Development and Anatomy which may well revolutionize teaching in these areas. Dr. Demirjian made a good point in his recent letter to me about CFDE and its fund-raising goals:

“Dental research and education go hand in hand. (. .) I can see that our needs for extra funds will always be part of reality if we wish to further our knowledge in both of these sectors. I strongly urge the members of the dental profession and allied industries not to withhold their financial support for the progress of dentistry, because they will be the first ones to profit from the results of this research in the future.”

que chose d'unique au pays. Je suis convaincu que les bienfaits de cette initiative se feront sentir non seulement dans les facultés mais dans toute la profession. »

« Cela me fait vraiment plaisir de constater que la médecine dentaire semble avoir reconnu l'importance de montrer à ceux qui doivent former des professionnels comment enseigner. Je prévois que la profession dentaire donnera ainsi l'exemple aux autres professions telles que la médecine ou le droit, par exemple. »

Ces « investissements très précieux du FCED » . . . aideront « à accroître la productivité, à améliorer la communication au sein des départements, à mieux gérer le temps et à favoriser davantage le développement de la faculté ».

À mon avis, la citation suivante résume le tout :

« Cela fait huit ans que j'enseigne en médecine dentaire et j'en ai appris plus en neuf jours que pendant toutes ces années. »

Un programme qui suscite de tels éloges de la part de ses participants engage sérieusement le Fonds. Nous en sommes redevables à son coordonnateur, le Dr John Eisner, de l'université Dalhousie, ainsi qu'aux Drs David Chambers, de l'université du Pacifique, Bruce Squires, de l'université de Western Ontario, et Richard Lewis, de l'université de Windsor, qui ont présenté des cours magistraux.

Une part importante des sommes que distribue le FCED est affectée à l'octroi de bourses individuelles aux diplômés en médecine dentaire qui ont l'intention de retourner à l'université pour y faire de l'enseignement ou de la recherche.

« Il n'est pas facile d'entreprendre des études supérieures, car cela entraîne des dépenses plus importantes qu'on le penserait. L'appui que j'ai reçu de votre organisation a été plus que bienvenu et fut bien utilisé . . . Je comprends mieux que jamais maintenant la raison d'être du FCED. »

Le FCED permet aussi d'aider de jeunes et talentueux dentistes à faire reconnaître leurs travaux de recherche sur le plan international.

« Je voulais vous informer que les sommaires que j'ai présentés à l'Association internationale de la recherche dentaire et à l'Association américaine des endodontistes ont été acceptés . . . Ils seront publiés dans les journaux des deux associations . . . »

Le FCED soutient aussi la recherche que poursuit, à l'Université de Montréal, le Dr Arto Demirjian qui est à mettre au point un vidéo-disque interactif sur l'anatomie et le développement des dents. Cette technique pourrait bien révolutionner l'enseignement dans ce domaine. Dans une lettre récente, le Dr Demirjian me soulignait ainsi l'importance du FCED et de ses levées de fonds :

« La recherche et l'enseignement dentaires vont de pair . . . Je vois que nous aurons toujours besoin de fonds additionnels si nous voulons élargir nos connaissances dans ces deux secteurs. J'invite donc instamment les membres de la profession et des industries connexes à ne pas refuser leur appui financier pour l'avancement de la médecine dentaire, puisqu'ils seront les premiers à bénéficier du résultat de la recherche. »

Par ailleurs, le FCED affecte de fortes sommes en matière de sensibilisation. L'aide qu'il a



In addition to the above education-related activities, CFDE also spends a great deal on dental awareness. Our assistance provided to the CDA Community Senior's Dental Health Promotion Campaign has enabled CDA to nationalize what was originally a pilot project in the Toronto area. Now, public health units, seniors' groups, and local dental societies across Canada are benefitting from the information offered in "What a Difference a Little Care Makes". CFDE also contributes to National Dental Health Month and CDA's Dental Awareness Program.

I'm sure you would agree that dentistry would not be what it is today were it not for the team approach. CFDE grants funds to auxiliary groups, as well as dentists, because of its strong belief in the importance of the dental team. For example:

"I can only say that your support in the field of Dental Technology is a clear indication that the Board has a broad outlook on dentistry's reach and is not confined to the immediate problems of clinical dentistry."

Highlights of 1987 Income

I am delighted to announce that CFDE has surpassed its budgeted goals for income in 1987 and has, in fact, increased income in 1987 by \$47,146 over 1986. Our total income for 1987 was \$329,125.

This increase was, in large part, due to a growth in the number of donations from dental trade and industry. Of particular note is a \$35,000

donation from Colgate-Palmolive Canada which is earmarked for the CDA's "First Teeth" program, an awareness program for parents of young children.

Other corporate sponsors were also very kind to CFDE, but I must point out that, due to an error in 1986, which led some companies not to give that year, they generously doubled their donations in 1987. There may, as a result, be somewhat of a decrease in corporate sponsorship in 1988. The staff members and industry representatives on the Board of Trustees hope, however, that increased efforts in this area will maintain this high level of industry support.

Although donations from dentists appear to be down a couple of thousand dollars from 1986, I must point out that a large number of dentists participated in CFDE's first lottery, which raised \$29,475. Since this was our first attempt at such a novel means of fundraising, the Board decided to postpone the decision re: holding another lottery for a year, to ensure that it did not decrease support in any way. On the contrary, it has encouraged individuals who may not have otherwise contributed to the Fund to support CFDE. Although a few people did not agree with the concept, I hope they now see that it has been a valuable fundraising mechanism. The Board will decide in April of 1988 if another lottery will be held in future.

It was obvious this year that all dental organizations are feeling the pinch of tight times. Donations from this sector were down by \$4,710. Let's hope next year will see

apportée à la Campagne de promotion de la santé dentaire auprès des personnes âgées a permis à l'ADC d'étendre à la grandeur du pays un projet pilote réalisé d'abord dans la région de Toronto. Aujourd'hui, les services de santé publique, les groupes de l'âge d'or et les sociétés dentaires locales bénéficient, partout au pays, de l'information offerte dans Un peu de soins peut tout changer. Le FCED apporte aussi sa contribution au Mois national de la santé dentaire et au Programme de sensibilisation à la santé dentaire.

Vous reconnaîtrez, j'en suis certain, que l'exercice de la profession ne serait pas ce qu'il est aujourd'hui, si on n'y avait pas introduit l'esprit d'équipe. Le FCED apporte donc son aide aux groupes auxiliaires comme aux dentistes, parce qu'il croit en l'importance de cette équipe. Voici un témoignage en ce sens :

"Tout ce que je puis dire, c'est que l'appui que vous avez apporté au domaine de la technologie dentaire indique clairement que votre conseil envisage la médecine dentaire dans une perspective d'ensemble et non seulement en regard des problèmes immédiats qui peuvent surgir sur le plan clinique."

Les principaux revenus de 1987

Il me fait grand plaisir d'annoncer qu'en 1987, la levée de fonds du FCED a dépassé l'objectif que nous nous étions fixé. Le revenu global s'est élevé à 329 125 \$, soit 47 146 \$ de plus qu'en 1986.

Cette augmentation est attribuable, en grande partie, au fait que l'industrie dentaire s'est montrée encore plus généreuse que par le passé. Soulignons, par exemple, le don de 35 000 \$ de la société

Colgate-Palmolive Canada, qui a été affecté au programme Les dents de lait, que l'ADC a mis sur pied à l'intention des parents qui ont de jeunes enfants.

Le FCED a aussi bénéficié des largesses de plusieurs autres entreprises dont certaines ont doublé leur contribution en 1987, comblant ainsi un manque à gagner survenu en 1986. En effet, à cause d'une erreur, ces sociétés n'avaient pas versé de contribution cette année-là. On peut donc s'attendre à ce que la part des entreprises baisse quelque peu en 1988. Toutefois, le personnel du Fonds et les représentants de l'industrie, qui siègent au conseil des fiduciaires, espèrent conserver l'apport de l'industrie à ce niveau élevé.

Bien que leurs contributions semblent avoir baissé d'environ deux mille dollars par rapport à 1986, je dois souligner que les dentistes ont participé en grand nombre à la première loterie du FCED qui a rapporté 29 475 \$. Puisque c'était la première fois que nous utilisions cette nouvelle façon de recueillir des fonds, le conseil a préféré attendre avant de décider de renouveler l'expérience cette année, question de s'assurer que la loterie n'a pas contribué à faire baisser la participation. Or, bien au contraire, l'initiative a favorisé la participation de ceux qui autrement n'auraient pas apporté leur appui au Fonds. Certains n'étaient pas d'accord à utiliser cette méthode; j'ose croire, cependant, qu'ils en reconnaissent aujourd'hui le bien fondé. Le conseil prendra sa décision au mois d'avril.

Il est évident que toutes les organisations dentaires se sont ressenties des contraintes financières de l'année écoulée. Leurs dons ont baissé de 4 710 \$. Espérons que la situation s'améliorera cette année. Je dois néanmoins exprimer la gratitude des fiduciaires à l'endroit de toutes les



an increase in financial support. I must still, however, express the Trustees' gratitude to all of the organizations which offer less tangible support to CFDE by publishing its news releases, its advertisements and by promoting its importance at their meetings.

A special note of thanks must be extended to dental students and faculty members in all of the dental schools across Canada. Through the efforts of individuals such as Dr. Robert Brandon and Dr. Marcia Boyd, students and faculty were made more aware of CFDE's role and its contribution to dental education. As a result, donations from these two groups are up dramatically this year.

Dental hygienists across Canada almost matched their 1986 level of donation. The Board of Trustees feels, however, that even more hygienists should be donating to CFDE. Staff members are working closely with the leaders of the Canadian Dental Hygienists' Association to increase awareness of the Fund among its members.

You will note a great increase in our "Other Contributors" category this year. This is mostly due to a donation of \$1,127 made by Dr. Arlington Dungy, Vice-President, Medical and Allied Health of the Children's Hospital of Eastern Ontario in Ottawa. The hospital's department of dentistry held a fundraiser and ended up with even more than they had hoped for, and graciously donated the rest to the Fund. I must extend public thanks to Dr. Dungy for this generosity.

With the decline in interest rates, our investment income fell by \$1,624 this year, but it is hoped that there will be an

upward trend in 1988 which will encourage more long-term investments.

I am pleased to end my explanation of CFDE's income for 1987 on a special note. This year, a new Fund was established in honour of dentistry's long-time friend Dr. Nicholas A. Mancini. Over \$4,000 was raised at a roast, sponsored by the Ontario Dental Association, to set up this Fund. Dr. Mancini intends to establish guidelines for the revenue generated by this Fund once it has reached his goal of \$10,000. I would encourage all of you who have benefitted from the wisdom and enjoyed the charm of Dr. Mancini over the years to make your next donation payable to the Nicholas A. Mancini Fund — CFDE.

Farewell

I am pleased at the Fund's performance this year, and will be sad to pass the chair over to Dr. Ramage on October 1, 1988. I know, however, that new, young blood is needed to assist CFDE in facing the challenges of the advances in dentistry and dental education in the years to come.

Thank you to all those who have personally helped me during my term on the CFDE Board. On behalf of the Board of Trustees may I extend my appreciation to those who donate to the Fund and to those who apply for its assistance, giving it its raison d'être.

Respectfully submitted,

J. Fred Reid, D.D.S.
Chairman,
CFDE Board of Trustees

organisations qui ont apporté un appui moins visible mais aussi réel au FCED en publiant ses communiqués et ses annonces et en soulignant l'importance du Fonds à leurs assemblées.

Il convient d'adresser des remerciements tout particuliers aux étudiants et aux professeurs des écoles dentaires du pays. Grâce, notamment, aux efforts des Drs Robert Brandon et Marcia Boyd, étudiants et professeurs ont été davantage sensibilisés au rôle du FCED et à sa contribution à l'enseignement dentaire. En conséquence, les dons de ces deux groupes ont augmenté considérablement au cours de l'année.

Les hygiénistes dentaires du Canada ont contribué presque autant qu'en 1986. Le conseil des fiduciaires estime cependant qu'elles devraient être plus nombreuses à faire leur part. Le personnel du FCED et les dirigeantes de l'Association canadienne des hygiénistes dentaires travaillent étroitement à les sensibiliser davantage.

On remarquera que la participation des « autres donateurs » a beaucoup augmenté cette année. Cela est attribuable surtout au don de 1 127 \$ versé par le Dr Arlington Dungy, vice-président de Medical and Allied Health, de l'Hôpital pour enfants de l'Est de l'Ontario, à Ottawa. Le service de médecine dentaire de l'hôpital a organisé une levée de fonds qui a rapporté beaucoup plus que prévu, et a versé l'excédent au FCED. Nous devons remercier publiquement le Dr Dungy de sa générosité.

La baisse des taux d'intérêt a réduit notre revenu de placements de 1 624 \$. Nous espérons cependant que la tendance se remettra à la hausse en 1988, afin d'encourager les placements à long terme.

Il me fait plaisir de terminer mes explications sur le revenu de 1987 sur une note toute particu-

lière. Nous avons assisté, cette année, à la création d'un nouveau fonds, en l'honneur du Dr Nicholas A. Mancini, un vieil ami de la médecine dentaire. Lors d'un dîner organisé par l'Association dentaire de l'Ontario, on a recueilli comme fonds de lancement la somme de 4 000 \$. Le Dr Mancini a fait savoir qu'il établira des directives concernant l'emploi des sommes ainsi recueillies, lorsque le fonds aura atteint 10 000 \$. Je vous invite tous, vous qui avez bénéficié de la sagesse et du charme du Dr Mancini au cours des ans, à faire votre prochain don à l'ordre du Fonds Nicholas A. Mancini — FCED.

Au revoir

Je suis bien satisfait de la performance du Fonds au cours de l'année et c'est avec une certaine tristesse que je remettrai les rênes au Dr Ramage le 1er octobre 1988. Je sais, cependant, qu'il faut apporter à FCED du sang nouveau et jeune pour l'aider à relever les défis que poseront dans les années à venir l'avancement de la médecine et de l'enseignement dentaires.

Je remercie tous ceux et celles qui m'ont aidé au cours de mon mandat au conseil du FCED. Par ailleurs, au nom du conseil des fiduciaires, j'adresse également mes remerciements à tous les donateurs de même qu'à tous ceux et celles qui font appel à l'aide du FCED, justifiant ainsi sa raison d'être.

Je vous prie d'agréer l'expression de mes sentiments respectueux.

Le président du Conseil
des fiduciaires du FCED,

J. Fred Reid, D.D.S.



Income by Source

Revenus et provenance

Our records have been audited by Thorne Ernst & Whinney. A copy of their report is available on request.

Notre comptabilité a été vérifiée par Thorne Ernst & Whinney. On pourra se procurer un exemplaire de leur rapport en faisant une demande à cet effet.

Business and Industry <i>Entreprises et industrie</i>	\$122,556	37.2%
Dental Profession <i>Profession dentaire</i>	78,935	24.0
Investment and sundry income <i>Revenus de placements et de sources diverses</i>	66,404	20.2
Lottery <i>Loterie</i>	29,475	9.0
Dental Organizations <i>Organismes dentaires</i>	22,191	6.7
In Memoriam <i>Dons commémoratifs</i>	5,472	1.7
Tributes and other contributors <i>Hommages et autres contributions</i>	2,762	0.8
Dental Hygienists <i>Hygiénistes dentaires</i>	1,330	0.4
TOTAL	\$329,125	100.0%

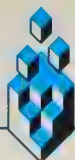
Dentistry has been enhanced by these grants

La médecine dentaire a progressé grâce à ces subventions

The Board of Trustees extends its appreciation to Mr. Anthony Bowker of Midland Doherty Ltd. in Toronto who generously donates his time and guidance to assist the Fund in maintaining a healthy investment portfolio.

Le conseil des fiduciaires désire remercier Monsieur Anthony Bowker de la compagnie Midland Doherty Ltée de Toronto qui a su donner si généreusement de son temps et de son expertise. Ses conseils nous ont été indispensables à gérer notre portefeuille d'investissements.

Teacher training fellowships (Dentists & Dental Hygienists) <i>Bourses de formation en enseignement (Dentistes & Hygiénistes dentaires)</i>	\$ 35,500	21.4%
Summer program to improve teaching skills of dental faculty members <i>Programme d'été de perfectionnement des compétences pédagogiques des membres des facultés dentaires</i>	35,000	21.2
Grants to dental schools <i>Subventions à des écoles dentaires</i>	20,500	12.3
Student table clinics and conference <i>Conférence et exposés d'étudiants</i>	16,000	9.6
Dental health month and other public awareness programs <i>Mois de la santé dentaire et autres programmes d'information</i>	14,000	8.4
Dental hygiene workshop and educational projects <i>Atelier d'hygiène dentaire et projets de formation</i>	14,000	8.4
Dental Teaching Conference on Strategic Planning <i>Conférence sur l'enseignement de la médecine dentaire appliquée à la planification stratégique</i>	10,000	6.0
Murray M. McDonald Memorial Lecture <i>Conférence commémorative: Murray M. McDonald</i>	9,000	5.4
Dr. Lorne E. MacLachlan Endowment/Teacher training awards <i>Fonds de dotation Dr. Lorne E. MacLachlan/ Bourses de formation d'enseignants</i>	8,924	5.4
Sundry awards/Octrois divers	3,100	1.9
TOTAL	\$166,024	100.0%



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Although individual names are not listed, the Fund's Trustees also wish to express their gratitude for the many smaller gifts received from various organizations.

Bien que les noms individuels ne soient pas cités, les fiduciaires du Fonds désirent exprimer leur appréciation reconnaissante pour les nombreux dons plus modestes provenant de divers organismes.

Endowment Foundations Fonds de dotation

Over the years foundations have been set up on behalf of the following people:

Dr. Lorne E. MacLachlan
Mr. Murray M. MacDonald
Dr. George W. Barrett
Dr. Nicholas Mancini

Des fonds de dotation ont été établis au nom des personnes suivantes:

*Docteur Lorne E. MacLachlan
Monsieur Murray MacDonald
Docteur George W. Barrett
Docteur Nicholas Mancini*



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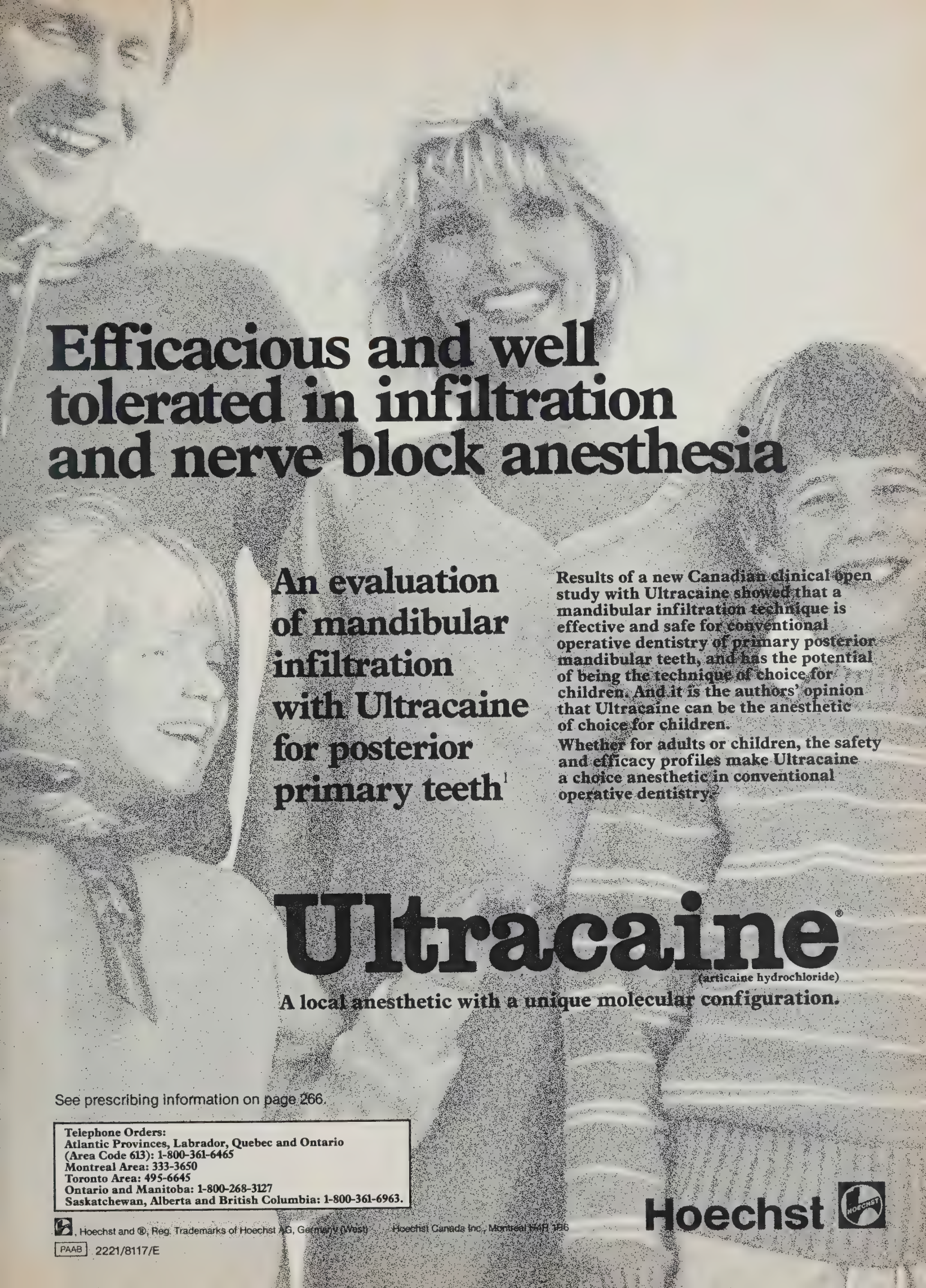
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Specialty Features

Current Perspectives on ESTHETIC RESTORATIVE DENTISTRY Part I

PORCELAIN LAMINATES

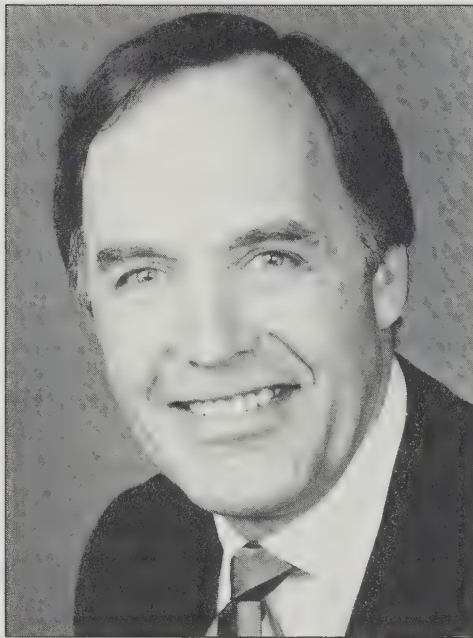
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He founded the highly successful "Biology of Occlusion" programs of the American Equilibration Society, of which he is the current Past-President. He is the mentor of TEST, The Esthetic Study Team, and TEST — II. TEST was the first Canadian study group dealing with esthetics. Dr. Nasedkin has presented programs on Occlusion/TM Joint and Esthetics, on a world-wide basis. He is a Regional Editor of *Cranio* (The Journal of Craniomandibular Practice) and the co-editor of the book, "Occlusion: The State of the Art".

He is in full time private practice in Vancouver, B.C.



John N. Nasedkin

Introduction

Dentists around the world are subjected to a barrage of information relating to new materials, with each heralding to be more beautiful, stronger, better and to require fewer insertion steps. One's conservative nature is reinforced by bad experiences with new products and with tales of woe related by salesman of competing products. Our usual stance is to

rely on tried and true materials with a 50 year history of clinical usefulness and to wait for the next step in dental progress to be forced upon us. On occasion, several significant changes occur simultaneously making for *Quantum Expansions in Dental Knowledge*, and now we have entered a new era in resin-bonded porcelain/ceramic dentistry. My intention is not only to inform you of those changes but to provide useful information to the practicing dentist to assist his purchase-making decisions.

This paper is intentionally presented as a perspective on "Esthetic Restorative Dentistry." Esthetic means "belonging to the appreciation of the beautiful" and in relation to dentistry should be differentiated from Cosmetic which is derived from the Greek "kosmos" or adornment. Esthetic dentistry enhances the natural beauty of the mouth and face and the term is used to specifically imply an improved relationship rather than a superficial one. Restorative is used in the adjectival sense and with all of the strong mental programming which has been drilled (pardon the pun) into dentists in terms of standards of quality, marginal integrity and longevity. Porcelain laminate restorations have shown an amazing durability at five years since the net result of the resin-bonding of the porcelain is to enhance tooth strength.¹ Predictable

results may be achieved since the dentist has the ability to custom-blend the shade at the insertion appointment to achieve an optimal restoration, while maintaining precise control of chair time.

Part I of this series deals with the porcelain veneer. In Part II we will discuss the posterior porcelain restoration and in Part III, crown and bridge repairs, methods of alternative fixed bridgework, and porcelain/ceramic full crowns resin-bonded to teeth.

Direct Bonding

Many dentists providing esthetic services limit their efforts to direct bonding of composite materials to tooth structure. The direct veneering composite materials have improved considerably in the last five years and new instruments have been designed and marketed to make placement more predictable.

Several problems always seem to arise:

1. The placement always takes longer than the time appointed. Either a proximal composite has to be replaced, or the shading is incorrect and requires alteration, or major contouring adjustments are required. For whatever reason, the dentist goes without lunch and staff members are annoyed and frustrated by the delay.
2. The fee charged or recommended is never appropriate for the time taken in completing the procedure. This means that the hourly return is reduced to that of a simple service and is not commensurate with the effort and time spent on a difficult and demanding procedure.
3. The patient always expects you to be responsible for future chipping, staining and repair of the veneer. Goldstein and Lancaster² have indicated that fully one-third of patients thought that a direct procedure was permanent and they have stressed the importance of adequate patient information and communication.

Laminate History

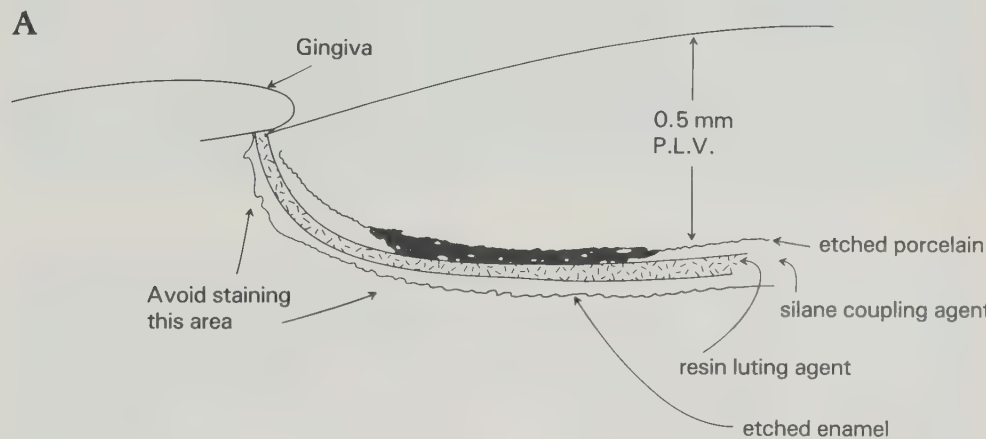
In 1982 the first work in porcelain laminate veneers was done at New York University and published in 1983 by Simonsen and Calamia³ and Horn.⁴ It was an extension of work done by Rochette in the early 1970's where he proposed essentially the technique used today.⁵ The evolution of resin-bonded porcelain occurred rapidly in North America after the New York University work became public and by 1985 posterior porcelain restorations were marketed by two major companies in North America. *Bridgework bonded porcelain was soon investigated⁶ and has become widely advertised but has found

limited but increasing application. Table 1 outlines this evolution. The arrival of high strength dentin bonding agents and reliable resin cements in 1988 will accelerate the progression towards

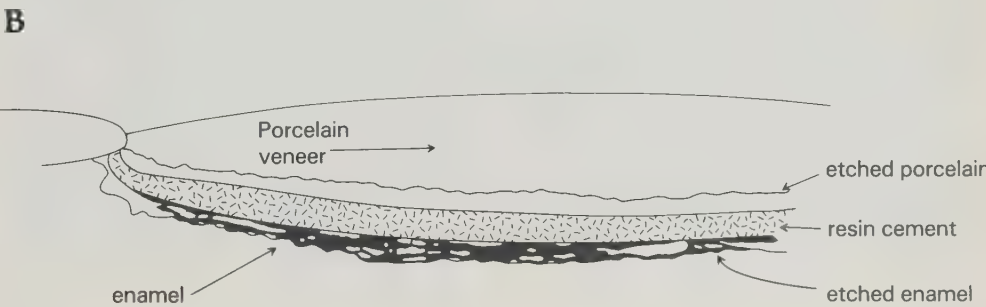
bonded porcelain used routinely and predictably in clinical practice.

*Mirage, Myron International, Kansas City, KS 66101.
Cerate, DenMat, Santa Monica, CA 93456.

FIGURE 1
Location of custom stain of the veneer



1A. For strong gingival characterization, the yellow neck stain is placed on the inner surface of the veneer. Care must be taken to avoid the area immediately adjacent to the gingival margin.



1B. For more diffuse characterization, the enamel is etched and the stain is placed on the tooth structure. The color is diffused through the resin cement and provides a more gentle tone to the gingival area.

TABLE I
Bonded porcelain laminate history

1972	—	Rochette's first publication in France on bonded porcelain
1982	—	New York University — porcelain veneers
1985	—	Posterior porcelain restorations become commercially available.
1986	—	Resin-bonded bridges are marketed.
1987	—	Fibre-reinforced bridges for higher strength
	—	Combination-cure (light initiated, chemically completed) resin cements.
	—	Glass ionomer foundations of high compressive strength.
1988	—	High strength dentin bonding agents (enamel equivalent).
	—	Resin-bonded porcelain crown (supra-gingival).
	—	Porcelain/ceramic substrate resin-bonded crowns (Willi Glas)

Porcelain Laminate Veneers Indications

- ☐ Esthetic improvement of tetracycline stained teeth.
- ☐ To correct malpositions of individual teeth.
- ☐ For fluorosed or hypoplastic teeth.
- ☐ Pulpal calcification or other discoloured teeth.
- ☐ Fractured or chipped teeth.
- ☐ Diastema closure.
- ☐ Porcelain fused to metal repairs.
- ☐ Failure of vital bleaching or need for permanent alteration.

Tooth Modification is Required

We do not use the term preparation in relation to porcelain veneers since the alterations are so subtle and the tooth structure is only slightly modified. The reasons for modification are listed in Table 2.

Superficial enamel rods become bur-nished on their ends and the surface of these exposed rods is very resistant to acid etching. Cut enamel has been shown to etch much more effectively providing a greater surface for micro-mechanical retention. Fankhauser⁷ has shown that there is a direct line relationship between tooth overcontouring and papillary bleed-ing index. In order to lessen the tendency for tissue irritation from over-contouring and to maintain the emergence profile in the gingival area, the tooth should be modified. Teeth which have received por-celain laminate restorations with intra-enamel modification are more stress resistant as confirmed by Caputo's work with photo-elastic stress analysis pub-lished in 1987.⁸ By modification of the tooth structure the dentist provides a definitive finish line which is more accurately reflected in the impression and which in turn allows the laboratory tech-nician to produce a veneer with well demarcated marginal detail. Such a well defined margin results in the most precise seating of the restoration.

Case Presentation

An esthetic consultation should allow the patient to visualize the anticipated result of treatment. A sample porcelain lami-nate veneer is helpful to demonstrate the translucency of the restoration and to indicate how little tooth structure is modified.

A diagnostic wax-up of the redesigned segment is helpful and may be used by the patient to explain the treatment plan to their significant others. See Figures 3, 4, 5. Patient education aids such as pamphlets and brochures, copies of arti-

cles and photographs all assist the den-tist to communicate how he can help in improving the smile and the function of the mouth. The second edition of "Change Your Smile" is a must for every dental reception area since it con-tains information not only on restorative but orthodontic, surgical and periodontal procedures as well.

*Change Your Smile — R.E. Goldstein, Quintessence Publishing.

TABLE III

Tooth Modification for porcelain laminate veneer

Depth .4-.5 mm
Incisal — finish short of incisal edge or lap the incisal
Gingival — at or above the gingival margin
Proximal — facial to the contact point or lingual to a finishable area
No sharp internal angles
Visible supra-gingival margins require long bevel.

FIGURE 2

Porcelain Laminate Veneers (information for patients)

Those dental restorations with the most life-like characteristics have until now been restricted to full crown (cap) applications. With the advent of the bonded porcelain laminate veneer we are able to duplicate the smoothness and fluorescence of natural tooth structure. These unique porcelain restorations can now be placed on surfaces which are highly visible.

Porcelain veneers require minimum removal of tooth enamel, and can frequently be prepared and placed without local anesthesia. They are subsequently bonded to the tooth through the application of sophisticated bio-technical chemistry. Veneers may be placed over sound existing tooth coloured fillings.

First treatment visit

1. Shade selection and esthetic consultation.
2. Minimal tooth preparation — often without freezing.
3. Impressions of tooth surfaces and opposite teeth.

Between visits

No temporaries are required.
Some slight hot and cold sensitivity may be present.

Second visit

- tooth isolation — slight anesthesia may be needed
- shade confirmation (may be stained to exact specifications)
- bonding to tooth
- finishing and occlusion (bite) check.

Recommendations

During the first 24 hours please:

- avoid stress of chewing hard foods
- no alcohol or medicated mouthwashes

Daily care

- Avoid acidulated fluoride mouthwashes and highly fluoridated tooth pastes.
- Wear a mouthguard for sports where potential for contact is present.
- Avoid the excessive stress of hard chewing or grinding teeth.

Anticipate a reasonable service life (based on current knowledge 8 to 12 years)

Advise: Your dentist or hygienist about your veneers when you are having your teeth cleaned.

Remember: Success and long life of your veneers will be dependent on how you protect and care for your restorations.

TABLE II

Reasons for tooth modification

1. Cut enamel etches more effectively.
2. Avoids over-contouring which produces tissue irritation.
3. Tooth becomes more stress resistant.
4. A definitive finish line is provided for the technician resulting in more accurate detail in the restoration.

Modification Technique

The enamel is reduced approximately .5 mm in thickness and ideally about one-half of the enamel thickness. Lasco* has produced a depth-cutter which provides for 0.4 mm of guide cuts of the labial surface of the tooth. A long, tapered rounded end-cutting diamond such as No. 014 is recommended for most reduction and surface modification. Rounded internal angles are required with no undercuts. The labial surface will be covered with porcelain and the preparation should extend gingivally either to finish above the gingival margin or precisely at the margin. In the proximal areas the tooth should be modified to finish facial to the contact point or if the contact must be broken to finish lingually sufficiently far to allow for marginal finishing — like a reverse $\frac{3}{4}$ crown. The proximal margins must be well-defined and in the case of tight contacts may require stripping with a diamond disk or separation with a wooden wedge prior to impression-taking. At the incisal the enamel should be left intact and the finish line placed about .75 mm from the incisal edge in a position where light is reflected at an angle away from the eye of the viewer. The alternative is to lap the incisal edge of the tooth and finish on enamel with a 120 degree chamfer on the lingual. Visible supra-gingival margins will require a long bevel. When diastema closure is undertaken the design of the restoration is that of a reverse $\frac{3}{4}$ crown to carry the margin to the lingual and allow for correct bulk and configuration of the contact point. An outline of tooth modification requirements is presented in table 3.

Stained or discoloured areas in the tooth structure

At the preparation appointment if areas of deep discolouration exist in dentin, the offending tooth structure may be removed and a layer of glass ionomer cement such as GC Lining Cement** placed to cover the stain. The natural opacity of this cement provides an effective colour block and the surface of the cement is retentive of the composite luting resin. Glass ionomer correction of heavily stained or discoloured areas is far more effective than later attempting to block the discoloured region with opaque or tinted shade modifiers.

Thin areas of discolouration may be blocked with the placement of a dentin adhesive agent followed by a resin-based



Figure 3. Diagnostic wax-up of proposed porcelain laminate veneers for 1.1 and 1.2



Figure 4. Teeth of patient before veneer modification or placement.



Figure 5. Teeth of patient with completed veneers.

*Lasco Diamond Products, Chatsworth, CA 91313.

**GC International, Scottsdale, AZ 85260.



Figure 6. Condition of upper anteriors with 1.1 labially positioned and incisal chip.



Figure 7. Teeth on presentation for veneer insertion. Teeth are prepared and no temporaries have been worn.



Figure 8. Four porcelain laminate veneers in place at three year follow-up.

opaque or tinting medium. Neutralization of stain is carried out with the use of colours or tints which are located opposite on the colour wheel, i.e. yellowish stains neutralized by violet.

Should some correction at the placement appointment be anticipated the dentist must advise his technician to place two layers of die spacer over the location of any intended correction. There will then be sufficient space internally to accommodate the placement of the corrective tint or opaque layer upon insertion.

Root canals in teeth

Teeth which have been endodontically treated should be veneered only when there are large amounts of enamel, well supported with bulk of residual dentin. Generally a solid internal post core like an *Endopost or **Parapost should be cemented for strength, and the tooth should not be unduly discoloured. If slight stain or discoloration is present, treat as indicated above.

*Kerr, Romulus MI 48174.

**Whaledent International, New York, NY 10001.

Exposed dentin

Dentin Bonding Agents

The recent advent of third generation dentin bonding agents with **Enamel-equivalent** bond strengths has overcome the problem of veneer sensitivity and of concern for the placement of labial veneers in elderly patients with exposed cementum. These materials are the main reason that bonded porcelain restorations may now be used in bridgework and full crown applications. There are currently three products which have reached the Canadian market. *Tenure is an aluminum oxalate version of the ferric oxalate system devised by Raphael Bowen in 1982.⁹ It is now in a second formulation that requires multiple steps in placement which are very time consuming. ** Gluma has been introduced to North America after several years of product experience in Europe¹⁰ and is a two solution system with simple application. Scotchbond 2*** is a new product from 3M which is similar in application to the Gluma system, and shows high immediate adhesive strength.

Dentin has only one-half the hydroxyapatite of enamel and 30 per cent of the bulk of dentin is made up of organic material, collagenous matrix primarily. The dentin bonding agents treat or prime the dentin surface to allow attachment to either the organic element (Gluma) or the

*Tenure – DenMat Corporation, Santa Maria, CA

**Gluma – Columbus Dental, St. Louis, MO

***Scotchbond 2 – 3M, London, Ontario.



Figure 9. Full-face view showing spacing of upper anterior segment.

organic and inorganic dentin elements (Tenure and Scotchbond 2). Priming materials are softeners which are followed by an unfilled resin type of adhesive. Scotchbond 2 and Gluma instruction manuals recommend etching of the enamel prior to placement of the dentin bonding agent. Most dentists find it difficult to discern the junction of enamel and dentin and to place an etching agent without some flow of the etchant along the line of demarcation. The recent development of dentin disclosing materials such as *Caulk Dentin Detector Gel will assist in overcoming this problem. It is recommended that the complete process be carried out without etching of the enamel and that only after placement and curing of the unfilled resin is a final freshening of the enamel rods with a diamond burr carried out. Retraction cord is placed prior to impression taking to assist in reflecting the tissues. Full arch impressions are necessary for the technician to be able to relate casts correctly. A shade guide custom tab is helpful, along with diagrams a chart of custom shading requirements, and a colour photograph if available should be sent to the laboratory. Any diagnostic wax-up should also be sent. In shade selection the dentist should err on the light side since the alteration of brightness (value) in a veneer is easiest by decreasing the value — toning down the shade. We should regard the veneer as an enamel replacement and recognize that

much of the colour perceived is derived from the dentin.

Composite restorations

Existing composite restorations may be left intact if recently placed and in sound condition. Defective restorations should be replaced with a heavily filled shaded composite of one of the anterior/posterior configurations such as Herculite XR* or Heliomolar. If the veneer margin must be placed on the composite, the extent of that margin should be minimal.

*Kerr, Romulus, MI 48174, USA.

Temporization

Provisional restorations are generally not required since only the superficial enamel has been reduced.

In esthetically conscious persons or when long veneers with dentin exposure are planned, we will place a shade-selected anterior composite without either etching or unfilled resin and gently contour the material to fill in the areas of tooth modification.

Appropriate exposure to a visible light source is followed by sufficient retention for 7-10 days during which water absorption takes place and the temporaries may be readily removed.

Laboratory Procedures

The addition-reaction polyvinyl siloxane impression materials show very high dimensional stability and 24 hour accuracy. The laboratory technician will pour a master die which will subsequently

be used for the preparation of a platinum foil matrix or for reproduction in a refractory die. The refractory die is taken in and out of the vacuum furnace as the porcelain is fired and will be sand-blasted away from the veneer on completion of the build-up. The tooth contacting surface of the veneer is etched for micro-mechanical retention prior to delivery to the dentist.

Many technicians are attempting to build veneers using an assortment of materials. A coordinated system is the best approach and the dentist should deal with a laboratory that uses a system in which all materials have been selected to work with each other and in which there is back-up from the porcelain manufacturer. The dentist should have telephone access to the technician doing his work so that communication may be optimal.

Veneer Insertion

Materials Required

1. Silane coupling agent.
2. Hybrid composite luting kit — resin cement, etching material, and unfilled resin, brushes.
3. Stain or tint kit.
4. Visible light curing unit.
5. Diamond finishing instruments, Shofu Ceramiste points and diamond polishing paste.

The patient returns for the placement visit, see figure 7, and may require very little anesthesia if any for the appointment. The teeth are cleaned gently with a non-oil, non-flavoured flour of pumice. An air-abrasive instrument may also be used.

Care must be taken to ensure that the veneers are gently handled as they are from .3 – .7 mm thick and are inherently fragile. The porcelain veneers when returned from the laboratory are etched on the inner surface. The etched surface makes them appear more white or opaque and they should be tried in only when wetted on the inner surface, or with a try-in paste or a filled resin for trial shade assessment. A silane coupling agent is applied to the inner surface of the veneer as an adhesion promoter. The most effective formulation is a hydrolyzed silane one-bottle configuration which requires no mixing or preparation beforehand (such as Scotchprime).*

Veneers are monochromatic due to the limited thickness available for the technician to work with. It is up to the dentist to custom stain and tint the veneers to life-like blending with the adjacent teeth.

* L.D. Caulk, Dentsply Int., Milford, DE 19963-0359.

*Scotchprime — 3M London, Ontario.

Step one in customizing is to ensure that all dark and dense stains are blocked with opaquer as outlined on page 251. *Step two* is to select the basic shade of luting cement. Most of the kits available are toned to the Vita shade range and have five shades of resin — A1, A4, B1, B2 and C1. The filled resin may be tried on the inner surface and inserted on the tooth for only a moment as light exposure will activate the setting of the resin.

Once the basic shade is selected, then custom and individual tints may be tried. An incisal tone of blue will provide the translucency needed to match an adjacent tooth providing the illusion of light transmission. Tint is placed on the inner surface of the veneer and try-in resin applied.

Placement of yellow neck stain will simulate the cervical region of mature teeth. Once the correct amount of stain and shade has been determined by trial and error, the veneer is thoroughly cleansed of all residue with a veneer cleaner such as acetone or methylene chloride and rinsed, dried and silane reapplied. The shade mix is reapplied to the inner surface of the veneer and exposed to a curing light for 40 seconds. This exposure partially locks the tint to the veneer and the regular steps are reassumed. A more subtle neck stain, is secured by etching the tooth and applying layers of stain to the tooth and curing them into place. The stain will be diffused through the luting resin and provide the mere suggestion of the underlying tint and to mimic the vitality of a natural tooth. See **Figure 1**.

Isolation must be secured

For single veneer placement the rubber dam is most effective for protecting the tissues and the patient and for exposing the operative field, see **Figure 11**. The lips must be held out of the working area and without rubber dam, plastic lip retractors are most helpful.

Margins are exposed with dry thin retraction cord left in place during the insertion. Teeth are etched from 30-60 seconds in order to provide a frosted etched enamel surface. Washing for 30 or more seconds is followed by heated air drying if available since this will improve bond strength.¹¹ Dead soft matrix or celluloid strips through the contact points prevent adhesion to adjacent teeth.

The dental assistant is a real partner in veneer placement. She will next coat the inside of the veneer with unfilled resin blown thin and followed by filled resin of the appropriate shade while the dentist coats the tooth with unfilled resin blown

thin. The veneer is carried to place and seated securely — it must not be shifted once in place. Should the initial placement be incorrect the veneer is removed and reloaded with filled resin in order to prevent the entrapment of air bubbles. A curing light is used to tack the veneer to place with a 20 second exposure. Now the margins are cleaned of filled resin and simultaneously sealed with unfilled resin following the technique outlined by Tay.¹² A fine brush moistened with unfilled resin is passed at right angles to the margin to seal the exposed resin. The veneer is now completely cured into place with multiple 30 second exposures covering all surfaces, including the incisal. Following light curing, the excess resin is readily removed from the veneer with a sharp gold knife, scalpel blade or tungsten carbide carver.

Margins may be finished with 40 micron diamonds followed by 15 micron diamonds run slowly over the margin, if required. **Visual enhancement is essential** in order to discern the margins, the tissues and to differentiate the resin luting agent. Loupes, operating telescopes and correct optical prescriptions of glasses all assist the dentist in this regard. Visible supra-gingival margins require finishing of the overbuilt porcelain back to the tooth contour since the ceramist is unable to build a feather edge or bevelled margin in porcelain without bulk. Shofu Ceramiste abrasive wheels run wet over the surface will restore the surface to maximum smoothness, followed by a diamond polishing paste to restore sheen. Occlusal adjustments are made if required.

Multiple Units

More than three veneers should be placed in sequence, starting with the veneer most forward in the arch. For six upper

anterior, start from the centrals and place the veneers progressively in a distal direction.

Mix and match veneers in combination with crown and bridgework.

For veneers which are placed at the same time as adjacent teeth, the porcelain work should be done by the same technician for the veneers and for the crowns. If possible adjacent crowns should be made in the same porcelain and resin-bonded to place as will be outlined in Part III of this paper. Adjacent bridge abutment crowns may not be as readily modified as the veneer which can, however, be harmonized to blend to both the bridge porcelain and to the other adjacent tooth or restoration.

Fees

The laminating service is demanding and the hourly return should be that of the highest fee for services provided in the



Figure 10. Full face view of completed veneers. Note confident and wide smile.



Figure 11. Isolation for veneer insertion provided by rubber dam placement.

dental office. Based on time approximations, we recommend a fee of 50-75% of the fee for a porcelain fused to metal crown. The fee for single units should be slightly more, but in groups of greater than two, this recommendation will provide the desired return.

Insurance

Unfortunately most insurance carriers have chosen to deny benefits to planholders for porcelain veneers on the basis of what they refer to as a "cosmetic service". In some areas of North America the progressive carriers are aware of the durability of the restoration and are beginning to provide partial coverage. Since the cost is less than that of a full crown and the anticipated life span is very much in excess of the five years at which time most carriers will replace a full crown, there can be no argument as to the advisability of providing veneers as an insurable restorative service. Any argument which a carrier makes is primarily based on cost control measures designed to benefit the shareholders of the company and not the insured.

The dentist must communicate with his patient and honestly advise him what he thinks is best. The advantages of reduced tooth destruction and improved soft tissue response must be explained. We should submit photographs, casts, and covering letters to all carriers in order to inform them of the validity of the service being recommended.

Cervical Erosion Areas

When lamination is planned for a tooth with cervical erosion the dentist must:

- 1. Restore the eroded area with glass ionomer restorative material or composite (dentin bonding agent secured) before tooth modification.
- 2. Modify the occlusion on the tooth. Lee¹³ has shown that tensile stress is the major etiological factor in cervical erosion. Both enamel and porcelain are strongest in compression and relatively weak in tension. The flexion produced in a tooth with occlusal force overload results in tension in the gingival area of the neck of the tooth, and the subsequent loss of enamel rods and of dentin. If restored with a veneer, the tooth must have all damaging forces relieved or the cervical area will be prone to micro-leakage.

Fluoride Awareness

Fluoride degradation of the porcelain surface has been documented.^{14,15} The patient is advised to be very cautious in the use of acidulated phosphate anti-carries preparations.

Prophy-Jet use: Although the initial research results indicate that this polishing device degrades only composite materials,¹⁶ it is prudent and wise to restrict multiple exposures of porcelain laminates to the air-abrasive instrument.

Contra-indications

Grossly broken down or overly restored teeth. Intensely stained endodontically treated teeth. Teeth subject to bruxing or parafunctional activity. Malpositioned teeth where a direct-access line of insertion cannot be secured. Huge spaces or diastema where closure would result in a bell-shaped contour.

Summary

Porcelain veneers are the restoration of choice for esthetics in many situations which in the past would have resulted in full crowns. The tissue response is excellent and the finished surface feels like natural tooth. Veneers exhibit natural fluorescence and absorb, reflect and transmit light like natural tooth structure. Patients are highly enthusiastic about these restorations which are conservative of their tooth structure and enhance their self-image. While the approach is somewhat technique sensitive, the reliable range of dental materials now available provides the dentist with the ability to deliver truly esthetic restorative dentistry. Δ

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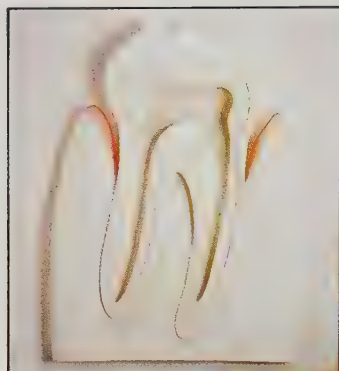
TABLE IV
Concise outline of porcelain laminate veneer insertion sequence

Clean	Pumice slurry
Prime	Silane coupling agent to veneer
Etch	Etching agent 1 minute gel preferred
Rinse	Water one minute
Dry	Non-oil or heated air
Isolate	Celluloid strips
Couple	Dentin bonding agent (if needed) — freshen enamel margins
Bonding agent	Unfilled resin or veneer and tooth — thin with air
Resin	Filled resin on veneer
Tack	Light 10 seconds — incisal
Seal margins with unfilled resin	Fine brush passed at right angles to marginal opening
Cure	Light 60 seconds Start at gingival margin
Remove excess	Tungsten carver
Finish margins	40 then 15 micron diamonds
Check occlusion and adjust	
Polish	Diamond paste

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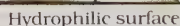
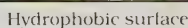
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COSMETIC IMAGING

A Look into the Future — Now!

Ken Neuman, DMD
Vancouver, B.C.

The author: Dr. Neuman is a DMD graduate of the University of Manitoba (1964) and maintains a general practice, with emphasis on cosmetic dentistry. He is a member of the West Broadway Dental Group in Vancouver.

He has served as President of the Vancouver and District Dental Society, 1975-76 and was Convention Chairman for the College of Dental Surgeons of British Columbia 1974-75, 1984, 1985 and 1986. He was President of the Pacific Dental Association from 1975 to 1978 and of the Vancouver Occlusal Seminar 1978-79.

Dr. Neuman was a founding member of the British Columbia Society of Preventive Dentistry and served as secretary, in 1974.

He is a founding member of the B.C. Chapter of the Academy of General Dentistry (AGD) and has served as a member of the AGD Council for Continuing Education and Council for International Academies. He is also a Past-President of the L.D. Pankey Study Club (1976-1978).

Dr. Neuman is a Fellow of the Academy of General Dentistry and the Academy of Dentistry Internationale. He is a member of the Canadian and American Dental Associations.

Have you ever thought how much fun it would be to be able to predict the future, to show your patients how they would look if they carried through on the treatment recommendations you made?

Our traditional methods of case presentation to this point in time have been the following; We show photos of work (done for someone else) done in the past, simi-

lar to that being proposed. If the patient liked what he/she saw, they would proceed. Or we would show study models of before and after changes using duplicate models on which time consuming, and exacting wax-ups were done. We asked our patients to make choices on that basis. We might also take out a copy of "Change Your Smile" by Dr. Ron Goldstein, and find some photos that were "close" to the desired effect. (This book, in my opinion, should be in every reception room in every dental office).

Now, for the first time we have a communication tool that allows us to become a "fortune teller". You can take a photo of your patient through a video camera, project it on a colour monitor and with a few simple "brush strokes", duplicate the real image of the person showing him/her what they would look like if they made those recommended changes. You have the ability to show them what they would look like if they closed the diastema, fixed the fractured corner of the central that may have existed for the last 15 years, did some cosmetic contouring to enhance their smile, and even show them what the teeth would look like if they were "whiter". You could show them what it would look like if they changed their dark amalgams to beautiful porcelain inlays plus a host of changes that we will mention during this report.

This service can be provided through what is called a *cosmetic imaging*, or *video imaging system*. This computerized dental evaluation is a melding of computer graphics and dental technology that enables us to enjoy increased case acceptance whether it involves a new crown, bonding or reconstructive surgery. The system consists of a video camera, a monochrome screen, a CPU and an electronic pen hooked up to an electronic

writing pad, which is attached to a colour monitor. Once the picture is on the screen, through the use of a zoom feature, the operator can zoom in on an area, make it up to eight times larger, correct or change it, then zoom back to normal size, where the small changes made will resemble the real teeth in a picture with the quality of a 35 mm photograph.

With the use of a simple polaroid photograph of the screen, the dentist can send this changed image home with the patient. You can also use the polaroid to communicate with the laboratory as an additional visual aid to help the technician produce what you and the patient have agreed is a nice result. The saying "a picture is worth 1000 words" can hold no more truth than when both patient and dentist can visualize and agree on results before treatment commences.

As an additional benefit to before and after video images, this system can also overlay a dental x-ray on the face of a patient in a combined picture. One can, by storing full frontal and profile views in combination with a panoramic film, transfer these images to a floppy disk and give the disc to the patient for storage, thus providing families with one of the most positive means of identification we could have. This technique could enhance the use of the micro dot bonded to the teeth of children for positive identification.

The practical sequence is shown in the photographs following. A photograph is taken through the camera and projected to the colour monitor. The dentist or auxiliary then copies a segment of the area to be changed and move it to an area in close proximity to the original. Through the use of some "dental instruments" changes can be made to the desired areas,

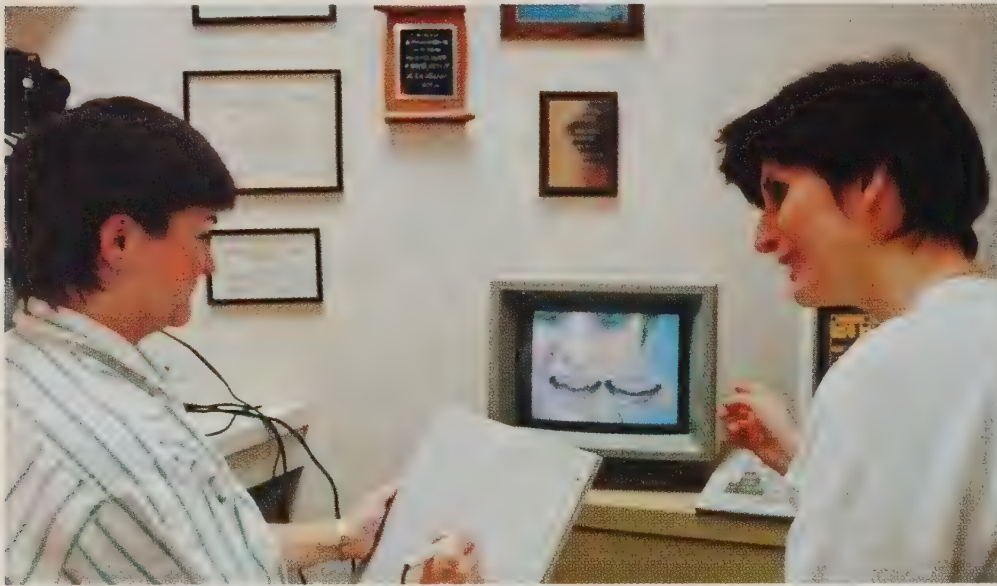


Fig. 1 – Photo projected to screen & duplicated



Fig. 2 – Changes made showing the before and after.



Fig. 3 – Korey examining the final results utilizing the polaroid as a comparison.

utilizing proper colours and contours. In the photos, Korey, a certified dental assistant, had very small peg laterals. Even though she had watched and assisted for hundreds of cosmetic changes with bonding and porcelain veneers, she had been accustomed to her look and had concerns about what the changes would look like. When the changes were made as in **Fig. 2**, the difference in her smile line combined with some cosmetic contouring of the lower teeth, showed her that indeed a look into the future was worthwhile. After a polaroid snap was made for her to take home, the decision to proceed was made immediately. **Fig. 3** shows Korey examining the finished result, holding the polaroid of the screen in **Fig. 2**, and being amazed at how close the final result resembled the polaroid of her glimpse into the future. Korey's polaroid was sent to the lab to aid in communicating how the final result would look. Our experience with Korey has been consistent with those who have had an opportunity to see themselves before and after. The results truly are remarkable.

All of the changes we have referred to take only a few minutes. We then have several choices, 1) to store the image in the system, 2) to give the patient a polaroid image, or 3) to transfer the image to a floppy disc which can be given to the patient. One thing must be stressed. We must qualify with our patients that what they are seeing on the screen is only a representation, and we may not be able to achieve the exact result shown but it will be close.

In evaluating cost effectiveness of this system you could pay for the lease cost of the system by having only one patient per month say yes to only one single procedure that they may not have had done, had they not seen it on the screen. The system will be available in Canada through Exan Computer Systems by the time this article is in your hands.

How about a look into the future. . . I predict a melding of this technology with Francois Duret's CAD/CAM system of crown manufacture, and the Fuji optical system where we can place a mirror inside the mouth and project that image to a screen for more definitive diagnosis and treatment planning. Perhaps one day we will have a projection of the intricacies of the root canal system to a large screen with microcameras mounted on a reamer. Sound ridiculous. . . . so did cosmetic imaging a few short years ago.

At the beginning of the article I asked "have you ever thought how much fun it would to be able to predict the future?" What do you think now? Δ

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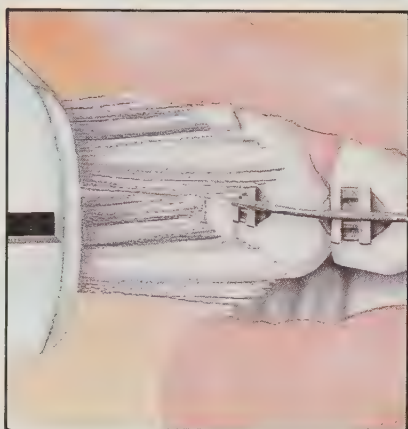
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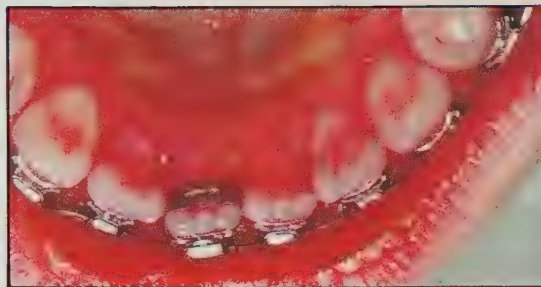
Following is an edited excerpt from a clinical study published in the Compendium of Continuing Education in Dentistry, Supplement No. 6, 1985. The study was performed by David E. Long, DDS, and William J. Killoy, DDS, MS, University of Missouri, Kansas City.

METHODOLOGY:

The study involved fourteen orthodontic patients with a plaque index greater than 50% and an interarch difference of less than 15%. The patients' teeth were stained with a disclosing solution and a plaque score taken using a modification of the O'Leary Plaque Index. Patients were instructed to brush one arch with the manual toothbrush using a modified Bass technique, and the other arch using INTERPLAK®. After brushing, their teeth were again disclosed and a second plaque score was obtained. Both scorings were performed by the same examiner, who was blind to the location of the toothbrushing.



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PAIN & HELPLESSNESS in the ANXIOUS DENTAL PATIENT

a multifactorial approach

Clifford C. Kuhn, MD
Louisville, Kentucky

ABSTRACT

Severe dental anxiety is a major problem which has its roots in a patient's anticipation of pain and helplessness during dental procedures. The interrelationship of anxiety, pain and helplessness is discussed, utilizing a biopsychosocial model.

SOMMAIRE

Une forte anxiété dentaire constitue un grand problème qui provient chez le patient de la peur d'avoir mal et de son impuissance durant les traitements. Voici une étude faisant appel à un modèle biopsychosocial et portant sur les rapports entre l'anxiété, la douleur et l'impuissance.

Dental anxiety is practically ubiquitous in our society. Studies report that 80 per cent of the population in the United States is apprehensive when contemplating a visit to the dentist.¹⁻³ Forty-one per cent of adults admit to delaying routine care because of fear,⁴ and because of severe anxiety an estimated 12 to 15 per cent totally avoid dental care.⁵ Patients report that the two most common causes of anxiety are expectation of pain^{6,7} and anticipation of being helpless² while unable to communicate verbally during the dental procedure.

The interaction between pain and anxiety is highly significant. The more anxious a patient is, the higher the level of pain he or she is likely to anticipate, regardless of the procedure planned.⁸ Also, the highly anxious patient is more likely to report a more painful experience during and after dental procedures.⁹ Patients with increased anxiety tend to be less cooperative, making the work more difficult,² and it has been reported that procedures take an average of 20 per cent longer when the patient has high anxiety.¹⁰

Although clinical observation leads to the conclusion that high anxiety states lower a patient's pain threshold,¹¹ this has not been demonstrated in the laboratory, where investigators have reported that anxiety does not have a significant effect upon either pain threshold or pain tolerance.¹² There are even some data to suggest that a modicum of anxiety may serve as a distraction that would decrease the tendency to report pain without affecting the perception of the stimulus.^{13,14} Nonetheless, anxious patients do have a tendency to report pain sooner during a given stimulus and to more frequently describe pain as subjectively intolerable.^{2,9} Reports show that as anxiety increases, so does the likelihood of interpreting noxious stimuli as pain.¹⁵ Hence, whereas anxiety may not affect the perception of pain, it seems to have a

demonstrable effect on the character of a patient's response to a noxious stimulus.

The patient's helplessness, or perceived lack of control over what happens in the dental environment, is another important contributor to the etiology of dental fear and anxiety.² For most people, a sense of loss of control is a psychological hardship. The perception of maintaining some control over an unpleasant situation not only reduces anxiety, but has been found to increase pain tolerance and to decrease the level of discomfort described at a specific level of noxious stimulation.¹¹

It is important to note that it is the perception of helplessness or control, more than the actual fact, that is the relevant variable. When a patient perceives the option of escaping, or by some means controlling a noxious stimulus, fear and anxiety can mobilize the organism and thus suppress the pain. However, when escape or control appears impossible, fear and anxiety can themselves become a component of the noxious stimulus, and thus exacerbate the experience of pain.¹⁴ This phenomenon is illustrated by Beecher's¹⁶ observations of heightened pain tolerance in soldiers who received extensive war injuries, prompting their removal from the unpleasantness of battlefield combat.

Recent advances in pain theory suggest that it is a complex phenomenon that cannot be understood simply on the basis

of the intensity, quality, location, and duration of a noxious stimulus. The fullest understanding of the pain experience depends, in addition, on many psychological, spiritual, and contextual or social factors.^{11,17} In our clinical work with pain patients in the Division of Behavioral Medicine at University Hospital, Louisville, Kentucky, we have found Engel's biopsychosocial model¹⁸ to be enlightening and pragmatic. The three components of the model can be summarized as follows:

A. Biological or Physical Factors

These include the intensity, quality, location, and duration of a stimulus and the physical means by which it is conveyed and transmitted through the body. Also included are considerations of physiological and chemical reactions concurrent with, and in response to, the noxious stimulus.

B. Psychological Factors

These include emotional states (i.e. anxiety, fear, depression or psychosis), character or personality style as exemplified by identifiable patterns of coping mechanisms, and cognitive aspects of the pain.

C. Social or Contextual Factors

These include the patient's ethnic or social relationships, the quality of the doctor-patient relationship, and issues of control vs. helplessness.

This model, of course, oversimplifies the situation. In actuality, the various factors interact across the lines drawn by the model and it is possible to discover elements of all three in any one factor. But, the model is useful in reminding the clinician that many factors are to be considered in assessing and managing the anxious, pain-prone patient, and it can serve as a guide for our discussion.

Social Factors

The social or contextual factors are considered first because many of them predate the first contact with the dentist or begin immediately with the first meeting. The setting of the dental office and the demeanor of the staff are of obvious importance. The waiting room should present a relaxed and inviting atmosphere with elements, such as current reading material, that communicate the dentist's concern for the patient's interests and comfort. Staff should be friendly, personal, reassuring, confident, and unhurried in carrying out their tasks. When the patient is admitted to the examining room, the dentist should receive him or her with genuine friendli-

ness and the greeting should be personal, accompanied by good eye contact.

Many patients have become anxious as a result of attitudes learned from other family members regarding dentists and dental care.¹ Often an anxious patient has previously had a traumatic experience at the dentist's office. Careful questioning regarding history and attitudes at the outset not only provides the practitioner with valuable information but communicates a genuine interest in the patient's unique and personal experiences and expectations. Dentists have a tendency to underestimate patient anxiety,⁴ perhaps because of their own familiarity with the procedures or an unwillingness to see themselves cast in the role of a fearful element or villain. Moreover, many patients are ashamed of their fears and are unlikely to spontaneously volunteer them.¹ Consequently, anything less than a direct enquiry on the part of the dentist is likely to allow this kind of information to go undetected.

The opportunity to influence the dentist's attitudes and responses personally is a key element in the patient's perception of having some control in the dental setting. Most patients consider their verbal skills the principal means by which they can communicate. Inasmuch as dental procedures effectively limit verbal communication, it is important to allow sufficient opportunity for this prior to initiating any procedure. When this is not done, not only is it likely to increase the patient's sense of helplessness, but it increases his or her need to use an alternative medium for communication, pain and pain behavior being a frequent option. The literature abounds with evidence that pain lends itself to effective and often powerful interpersonal communication.¹¹ This can result in a tendency on the part of the patient and the dentist to focus more, not less, on painful sensations during the procedure.

Before beginning any procedures, it is recommended that the practitioner should establish a reliable method by which the patient can communicate and maintain some control during the work.^{7,11,19} This gesture is most effective when it flows out of earlier communications reflecting interest in what the patient has to say. Despite being told he or she could do so, a patient undergoing a painful procedure might still feel powerless to interrupt the operation, if the dentist's demeanor has previously indicated an unwillingness to accede to that request. When patients believe that they have some effective influence on the procedure, anxiety is decreased.¹¹

Psychological Factors

Psychological factors that affect the experience of the anxious, pain-prone patient include identifiable affective or emotional states (i.e., anxiety, depression, or psychosis), variables of personality or characterologic coping style, and elements of cognition. Affective or emotional factors can be examined as part of the initial interview and by careful observation of the patient. It is recommended that the dentist make a direct inquiry regarding anxiety and depression.¹ It is important to listen carefully to the patient's responses, noting what is not being said as well as what is, a technique that psychiatrists call listening with the third ear. Anti-anxiety medication may be utilized to some advantage based on the clinician's assessment. However, although it has been shown that the use of oral valium can reduce anxiety at the time of dental appointment, it does not appear to alter the underlying fear.²⁰ Antidepressant medication is known to have some analgesic properties but this is best prescribed in the context of a long-term commitment to the treatment of depression and is not recommended for acute situations. Finally, it should be noted that many analgesic drugs (i.e. nitrous oxide and morphine) seem to work principally by reducing anxiety.¹¹

Careful attention during the interview to the patient's description of coping styles, and observation of his or her personality, can often provide data for the successful handling of dental anxiety. For example, the traits of extroversion and impulsivity have both been reported to be associated with higher pain tolerance,²¹ and when noted, can be harbingers of a more satisfactory outcome.

Techniques which directly impact upon a patient's cognitive skills have been extremely effective in modifying anxiety and pain response.¹¹ These may be grouped under two general headings: A) information sharing, and B) distraction techniques.

Sharing information about anticipated procedures is highly recommended as a means of controlling anxiety in patients and has been demonstrated to have a significant effect on pain tolerance.^{6,7} For most patients, it is more in the anticipation than in the actual experience of a procedure that this form of cognitive help is needed.⁴ The information shared should be accurate concerning what will be experienced.^{11,19} There is nothing to be gained by skewing the information in an unrealistically positive or pleasant direction, as this will ultimately undermine the patient's trust. It has been

demonstrated that highly anxious patients experience the greatest discrepancy between expected pain and experienced pain,⁸ despite the fact that their level of reported pain is higher than that of less anxious patients. Therefore, with such patients, the practitioner can usually predict with accuracy that the procedure will be less painful than the patient anticipates.

Lack of predictability is experienced by the patient as a form of helplessness or lack of control and contributes to a state of hyperarousal or hypervigilance.¹¹ This is to be avoided wherever possible because there is evidence that increased attention to a stimulus increases the perceived intensity of that stimulus.²² Thus, information sharing should concentrate on predictable sensations or perceptions and should have the effect of reducing uncertainty regarding expected discomfort and intensity.^{4,23,24} Careful judgment by the practitioner is necessary to avoid sharing excessive information, such as details of possible complications, which would only serve to increase the patient's uncertainty. During the procedure, inform where pain is probable or inevitable, but in doing so, avoid the word "pain" whenever possible, choosing instead such words as "discomfort" or "unpleasant". The pain experience depends in part on definition and information processing, and cognitive interpretations of uncomfortable sensations are substantial contributors to the degree of distress produced by those sensations.²² Information shared should emphasize brevity wherever appropriate and convey sincere concern when discomfort is unavoidable.

Another form of information sharing that bears mentioning is modeling — sharing information from the experience of other patients.^{6,19,25} This technique has been effectively used to improve the behavior of children during dental treatment,²⁶ and has been shown to reduce avoidance of treatment in adults.²⁷ Modeling may be introduced simply by the practitioner recounting the testimonial of another patient, but is probably most effective when the patients communicate more directly, either via videotape, film, or in person. A review of relevant literature suggests that this is an under-utilized technique with adult patients.

Distraction is the second general heading of strategies which influence the cognitive elements of the anxious dental patient's experience. This includes any technique which directs the patient's attention away from sensations or emotional reactions produced by a noxious

stimulus.²² Much attention was given to the distraction technique more than a decade ago when audio analgesia was in vogue, a method which utilized white noise as a distraction during dental procedures. Although it was effective for pain control in some instances, audio analgesia was abandoned by many dentists because of unpredictable and unsatisfactory results across the broad spectrum of their patient population.

It may be time to reconsider these strategies based upon what has been learned in the last 15 years. Melzack's classic study of white noise demonstrated that it was only effective when accompanied by a clear verbal suggestion that it would be.¹¹ Also, it has since been reported that techniques involving visual distraction are more effective than auditory ones.²⁸ The principle of limited attentional capacity, which simply asserts that the conscious allocation of attention cannot be given to two competing stimuli simultaneously, has led to increased confidence in the prediction that expending effort on a challenging or absorbing task can substantially consume one's attention, decreasing the possibility of attending to painful stimulation. Finally, it is evident that even in instances when there is no objective evidence for their effectiveness, distraction techniques are preferred by patients who claim that they help the subjective experience of pain.²² Hence, distraction has a rightful place in the armamentarium of useful cognitive techniques for the control of pain and anxiety.^{5,7,19}

Examples of distraction techniques that have been successfully utilized include suggestion, relaxation, hypnosis, biofeedback, meditation, guided imagery, white noise, audio music, audio entertainment, video entertainment, and video games requiring the participation of the patient. The correlation of greater efficacy in pain control with higher demand for involvement by the patient has been confirmed when these techniques are compared.²⁸ An innovative technique called "thought stopping" has recently been introduced²⁴ and has been utilized successfully with both children and adults. This involves considerable instruction and practice for the patient and thus, may not be appealing when relatively routine procedures are anticipated.

Biological Factors

Biological factors which influence anxiety and pain experience in the dental patient are mentioned last, not to imply least importance, but on the assumption that these are the factors most familiar to

dental practitioners and thus need the least elaboration. They include the anatomical structures upon which the dental procedure is performed, as well as the structural and chemical means by which painful stimuli are brought to the attention of the patient. A thorough review of this information has been recently published by Chapman²⁹ and is highly recommended. It provides the reader with a concise update on current knowledge of sensory transduction and neural transmission of noxious events, including recent data on modulation and inhibition of sensory transmission by neural and chemical elements.

These complexities notwithstanding, much of the biological management of pain in the anxious dental patient depends on the practitioner's thorough knowledge of the location, intensity, and duration of the noxious stimulation that will be necessary to complete a planned procedure. For most anxiety-prone patients, intraoral injections, drilling,¹ and extractions,⁸ stimulate the most fear. Every effort must be made to make these procedures as brief as possible and to minimize the local sensation of acute pain. Effective local anesthesia and high-speed drilling are obvious and familiar essentials in achieving this objective in most cases. General anesthesia can, of course, render a patient unaware of the immediate noxious effects of the dental treatment and is an option when the scope of the procedure indicates. Biofeedback has been utilized as a measure to control pain and anxiety in the dental office, but despite its frequently dramatic effectiveness in reducing temporomandibular joint pain, its efficacy in relieving stress and anxiety has been no greater than that of general relaxation training.⁵ Acupuncture has been used for a variety of purposes in the dental setting and has been shown to be an extremely effective analgesic.³⁰ However, its mode of action remains somewhat controversial in our society. Finally, although they may have limited applicability in the dental setting, placebos are known to have a demonstrable effect on pain, presumably through a mechanism shared by many successful interventions, that of stimulating the release of endogenous opioid peptides in and around the central nervous system.

Summary

The problem of dental anxiety remains a major one in our society and has its roots in the patient's anticipation of pain and helplessness during dental procedures. Successful management of the highly anxious, pain-prone patient is enhanced

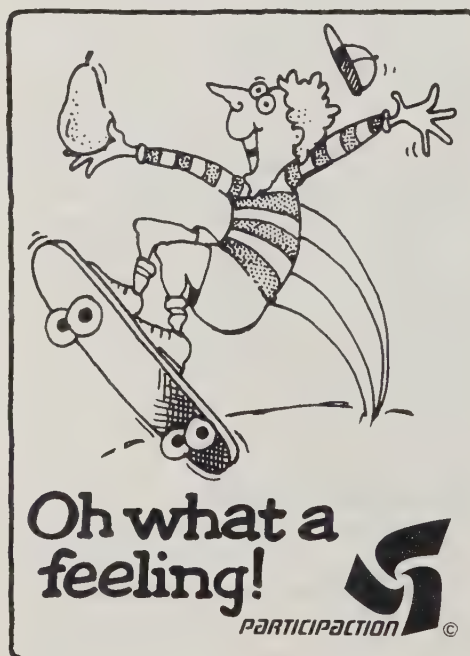
by considering the biological, psychological, and social factors involved. From this broad perspective, the dental practitioner may derive a variety of management options from which to choose, as warranted by the individual needs of each patient. The ideal management of the highly anxious dental patient will not only facilitate better tolerance for an individual appointment or procedure, but will enhance his or her willingness and ability to participate enthusiastically in a lifetime of dental maintenance and care. Δ

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Reprint requests to Dr. Kuhn.

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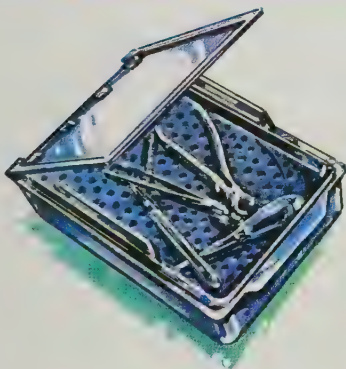


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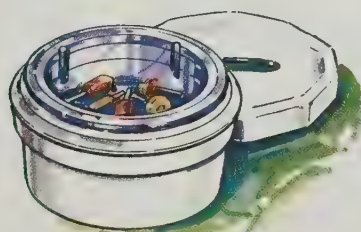
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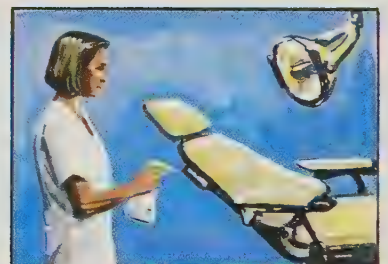


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THE SYMPTOM ICEBERG IN DENTISTRY

treatment-seeking in relation to oral and facial pain

David Locker, BDS, PhD
Toronto

ABSTRACT

This paper examines the "symptom iceberg" with respect to oral and facial pain. Using data from a survey of a sample of a Canadian population, it suggests that less than one in two who experience such pain consult a dentist or physician. Those with severe pain were no more likely than those with mild pain to seek professional attention. Socio-demographic and other variables associated with treatment-seeking are identified.

SOMMAIRE

Voici une étude portant sur "l'iceberg-symptôme" en rapport avec les douleurs buccales et faciales. D'après les données provenant d'un sondage effectué auprès d'un groupe représentatif de Canadiens, moins d'une personne sur deux qui éprouvent pareilles douleurs consulte un dentiste ou un médecin. Même ceux pour qui les douleurs sont vives ne songent guère à chercher des soins professionnels. Par contre, on a pu déterminer des facteurs socio-démographiques et autres associés à la demande de traitements.

Since the 1940's, a number of health surveys have revealed that only a small proportion of disease prevalent in the community receives professional attention. While much of this disease is minor, studies have shown that there are significant numbers of individuals with serious physical and mental conditions who do not present for medical attention.^{1,2} The term "clinical iceberg" has been used to refer to this phenomenon.³ One reason why many disorders do not find their way into the formal system

of medical care is that they do not manifest themselves in signs and symptoms and remain undetected by the individual concerned. However, there also exists a "symptom iceberg" such that only a small proportion of the symptoms experienced by members of the community give rise to a professional consultation. Studies using health diaries have estimated that less than one in 20 symptom episodes are ever made known to a health professional.^{4,5} Clearly, neither the presence of symptoms nor the severity of the condition in which they have their origins are sufficient to stimulate the seeking of medical care; social, psychological and organizational factors are also involved. Studies of illness behaviour, defined as "the way in which symptoms are perceived, evaluated and acted upon by a person who recognizes some pain, discomfort or other sign of organic malfunction",⁶ have attempted to identify these factors and their role in treatment-seeking. The basic question that needs to be answered is: in the presence of symptoms, what will an individual do and why?

The gap between need and demand for dental care is well-documented in the literature, many studies having reported on the lack of agreement between self-perceived needs for dental treatment and those found on clinical examination.^{7,8} However, little data have been published regarding the extent of the symptom iceberg in dentistry. Most oral health surveys have been limited to clinical assessments of the presence and severity of dental disease and ignore self-perceived signs and symptoms and behavioral responses to them. Moreover, studies of the utilization of dental services have not addressed the problem and rarely make a

distinction between routine visits for preventive reasons and visits stimulated by a dental or oral problem.

In dentistry, the clinical iceberg has received most attention with regard to temporomandibular joint disorders. Although systematic data are not yet available, there is a growing awareness that not all individuals with the signs and symptoms of these disorders appear in clinic populations.^{9,10} For example, while clinic populations are predominantly female, epidemiological studies using general populations show that sex differences in signs and symptoms are relatively small. Since much of what we know of temporomandibular disorders has been derived from the study of clinical populations, biases may have arisen because of differences between those who have sought treatment and the population of sufferers as a whole.⁹

This paper attempts to fill a gap in the literature by documenting the clinical iceberg with respect to oral and facial pain. The paper is based on data derived from a survey of a sample of the Canadian population designed to estimate the prevalence of such pain and its impact on the individual and the community.

Materials and Methods

A 22-item questionnaire was mailed to 1,014 persons drawn at random from the voters' list covering the City of Toronto. The questionnaire collected information on current and recent experience of oral and facial pain and characteristics and impact of that pain. Socio-demographic data were also collected. The eight questions about pain referred to pain that would be characteristic of disorders of the teeth, oral mucosa, masticatory system

TABLE I

The Pain Questionnaire

During the past FOUR WEEKS have you had any of these types of pain:

- a) toothache?
- b) pain in the teeth with hot or cold fluids or sweet things?
- c) a prolonged burning sensation in the tongue or other parts of the mouth?
- d) pain in the jaw joints?
- e) pain in the jaw while chewing?
- f) pain in the jaw joint when opening the mouth wide?
- g) pain in the face just in front of the ear?
- h) sharp shooting pains across the face or cheeks?

TABLE II

Percentage Seeking Professional Attention by Severity of Pain n = 253

Severity:	% Seeking Treatment
Mild	41.0
Moderately severe	47.1
Severe	52.2

Statistical significance: NS

and trigeminal nerve. The exact wording of the items used is presented in Table I. In order to minimize bias due to lapses in memory, a short recall period was used and all questions about pain referred to the four-week period prior to the completion of the questionnaire. The validity and reliability of the questionnaire has been reported in an earlier paper and will not be repeated here.¹¹

The survey largely followed the procedures recommended by Dillman¹² and used personalization and multiple follow-ups to secure a high response rate. Each subject received a questionnaire, a covering letter and a stamped, addressed return envelope. Two weeks later, non-responders were sent a reminder letter and after four weeks another questionnaire, reminder letter and return envelope were sent to those from whom a response had not been received. Finally, eight weeks after the initial mailing, a random sample of the remaining non-responders were sent a short version of the questionnaire with a letter urging response.

Results

Of the 1,014 individuals sampled, 137 had moved, died or could not be located by the post office. Questionnaires containing sufficient information for the

analysis reported here were returned by 594 of the remaining 877 eligible subjects. This represents a response rate of 68.2 per cent.

Overall, 39.7 per cent of those returning questionnaires reported oral or facial pain in the preceding four weeks. This estimate is high, largely because pain in the teeth with hot and cold foods or sweet things was included as one of the pain items. This was reported by 28.8 per cent of respondents. The mean number of days on which pain was experienced was 6.2 (s.d. = 6.7) for those reporting pain and 1.9 (s.d. = 4.9) for the sample as a whole. Differences between males and females in the reporting of pain were small and not statistically significant. Significant differences did emerge with respect to age: 62.5 per cent of those aged 18-24 years reported pain compared with 22.6 per cent of those aged 65 and over ($p < .0001$).¹¹

The symptom iceberg

Of those reporting oral or facial pain in the four weeks prior to completion of the questionnaire, only 44.1 per cent had sought professional attention. A dentist was consulted by 35.9 per cent, a physician by 7.2 per cent and 1.0 per cent had consulted both. Consequently, at the time of completion of the questionnaire, over half had not presented for professional advice.

Table II shows the association between the severity of the pain and the seeking of professional attention. Although a higher percentage of those reporting severe pain than those with moderate or mild pain had consulted a dentist or physician, the differences were not statistically significant. Of those whose pain was severe, 47.8 per cent had not sought professional advice.

The data presented above refer to the proportion of individuals who do not seek

professional attention in relation to oral and facial pain. They show that slightly less than one in two respondents reporting pain had seen a dentist or physician. Because of the retrospective nature of the study, it is not possible to obtain comparable data with respect to symptom episodes. This requires the use of prospective methods and data collection devices such as health diaries in which daily symptom experiences can be recorded.

A symptom episode is defined as one or more consecutive days on which a symptom appears. According to this definition, two days of pain separated by a pain-free day would count as two episodes. Since it is likely that more than one episode would be required to stimulate the seeking of dental care, the symptom iceberg with respect to episodes will be greater than one in two.

Treatment-seeking

A series of analyses, using contingency tables and the chi-square test, were undertaken to explore the association between treatment-seeking and a variety of independent variables. Mechanic⁶ and Anderson and Newman¹³ suggest that these variables exert a major influence on the decision to seek professional care. The variables are of four main types: 1) socio-demographic variables, 2) variables describing the characteristics of the pain, 3) variables relating to the social and psychological consequences of the pain and 4) enabling variables such as income or membership in a dental insurance plan.

Socio-demographic variables

Table III gives the results of the analysis using the socio-demographic and access variables. Although females were more likely than males to have consulted a dentist or physician, the differences were not statistically significant. Significant differences were observed with respect to age and place of birth. Those aged 45 years and over were more likely to have sought professional attention than those aged 44 years and under ($p < 0.01$), while those born outside Canada were more likely than native born Canadians to have seen a dentist or physician ($p < 0.05$).

Enabling variables

The variable used in the analysis was membership in a dental insurance plan. Approximately 56.0 per cent of the 594 respondents as a whole and the 253 respondents reporting pain were covered by an insurance plan which paid for all or part of their dental care.

Table III shows that such coverage had

no effect on the seeking of professional attention. This analysis was repeated while controlling for the severity of the pain. The analysis was undertaken to test the hypothesis that insurance coverage would be more likely to promote treatment-seeking in the context of mild pain. This proved not to be the case. Those with insurance coverage were no more likely to have consulted a professional than those without, irrespective of the level of the pain.

Characteristics and impact of the pain

Although the reported severity of the pain was not associated with the seeking of professional care, a number of variables describing the character and impact of the pain were. Table IV shows the results of the analysis using these variables. Treatment-seeking was associated with the number of pain symptoms reported ($p < .01$), the mean number of days on which pain was experienced ($p < .0001$) and past pain experience, measured in terms of the frequency of pain episodes in the past year ($p < .05$).

The impact of pain on the individual was assessed by responses to a series of questions concerning daily activities such as sleep disturbance, changes in diet, time off work, increased bed rest, reduced social contacts and confinement to the home. Overall, 36.9 per cent reported one or more of these impacts, the most frequent being changes in diet (reported by 30.6 per cent). Those who reported that the pain had an impact on daily living were more likely to have sought professional attention ($p < .05$). The most important individual impact item was sleep disturbance; 63.0 per cent of those reporting disturbed sleep had consulted a dentist or physician compared with 41.1 per cent of those whose sleep was not disturbed ($p < .05$). Similarly, those reporting that the pain had caused worry and concern about their oral health were more likely to have sought professional attention ($p < .05$).

Multivariate analysis

A binary regression analysis was undertaken to assess the relationship between treatment-seeking and each independent variable while controlling for all other variables. When dichotomous dependent variables are used in ordinary least squares regression the assumptions of normality and homogeneity of variances are violated. However, if the values of the dichotomous variable are not extreme, then binary regression produces results

that are comparable to the more sophisticated logistic regression.¹⁴

Although severity of the pain and insurance coverage were not significantly associated with treatment-seeking, they were included in the analysis along with all variables showing a significant association. The results show that age, duration of the pain and sleep disturbance had a significant independent effect when controlling for all other variables ($p < .05$ in all cases).

Self-medication

One alternative to seeking professional dental care is self-medication. Of those

who had not consulted a dentist or physician, 21.1 per cent reported that they had taken medication of some kind. This means that four out of 10 of those reporting pain had neither sought professional attention or taken self-prescribed medication. However, the majority of those who had done nothing in relation to their pain reported that it was mild.

Discussion

This paper has shown that oral and facial pain are fairly common among the general population, with almost four out of 10 respondents reporting some pain experience in a four-week reference

TABLE III

Percentage Seeking Professional Attention by Sociodemographic and Access Variables n = 253

Sociodemographic Variables		% Seeking Treatment	Statistical Significance
i) Sex:	Males	38.9	NS
	Females	47.1	
ii) Age:	18-24	36.6	$p < .05$
	25-44	38.1	
	45-64	61.5	
	65+	56.3	
iii) Place of birth:	Canada	38.5	$p < .05$
	Elsewhere	56.1	
Enabling Variables			
i) Dental insurance status:	No coverage	45.9	NS
	Full or partial coverage	43.1	

TABLE IV

Percentage Seeking Professional Attention by Character and Impact of Pain n = 253

		% Seeking treatment	Statistical significance
i) Number of pain symptoms:	One	33.3	$p < .05$
	Two	42.4	
	Three or more	59.0	
ii) Duration of pain:	4 days or less	34.0	$p < .01$
	5 or more days	53.5	
iii) Frequency of pain episodes in past year:	None	38.8	$p < .05$
	Frequent	45.5	
	Continual	80.0	
iv) Social impact:	None	37.9	$p < .05$
	Some	53.2	
v) Sleep disturbance:	No	41.1	$p < .05$
	Yes	63.0	
vi) Worry and concern:	None	35.8	$p < .05$
	A little	42.9	
	A lot	61.1	

period. The paper has also presented some preliminary data on the symptom iceberg in dentistry. This iceberg is important for a number of reasons. Most obviously, there is the problem of unmet need. Clearly, many people are subject to pain, discomfort or disability, at least some of which might be alleviated by professional care. Where pain or other symptoms are the early manifestations of serious clinical conditions, then a failure to present may make subsequent treatment more difficult, more expensive or less successful. Less obvious is the problem of bias arising from the study of patient populations referred to previously. If there are systematic differences between those who seek professional care and those who do not, then the study of patient populations may lead to a distorted view of the nature and causes of oral conditions.

As evidence of the existence of the symptom iceberg, the data presented above are subject to a number of limitations. First, the study looks at individuals rather than symptom episodes. Second, it is confined to oral and facial pain and ignores other symptoms such as sore and bleeding gums, food packing, discomfort from dentures, discomfort from aphthous ulcers or herpetic lesions, dry mouth and taste disturbances. Had these other symptoms been included and had the study focussed on episodes rather than individuals, it is likely that the symptom iceberg would have been substantially greater than that revealed here. Nevertheless, less than one in two individuals reporting pain had seen a dentist or physician, and this ratio changed only slightly when only those reporting severe pain are considered.

A third limitation of the study is that no clinical examinations were undertaken, so no objective oral health data are available to supplement the data collected by the questionnaire. Consequently, the conditions giving rise to the pain reported by the respondents are not known and the short and long-term clinical significance of those conditions cannot be assessed. In this regard, the study has little to say about the clinical iceberg in dentistry. Clearly, further research is required using prospective methods and clinical follow-ups in order to further explore this issue with respect to dental disorders.

The study has also identified a number of variables which were associated with treatment-seeking in relation to oral and facial pain. Socio-demographic variables and variables concerning the character and impact of the pain were shown to be important. It should be remembered,

however, that these variables are more likely to tell us who seeks treatment rather than why. Treatment-seeking is the end result of a sometimes lengthy decision-making process which cannot be captured by means of the variables identified here. This decision-making process has various stages and involves changes in the perception of symptoms and the interpretation of their meaning and significance. However, variables such as the duration of the pain and its impact in terms of sleep disturbance seem likely to have some influence on perception and interpretation. In turn, this decision-making process is an important determinant of the patient's view of the problem and his/her expectations of treatment.^{15,16} Consequently, to establish why the patient has presented at a particular point in time can be of great value in managing both the patient and the problem. In this respect the study of illness behaviour is of direct clinical relevance. To date, these issues have received relatively little attention in dentistry. Further research is indicated to arrive at a more comprehensive understanding of both the symptom iceberg and treatment-seeking for dental and oral conditions.

Summary

Only a small proportion of the symptom episodes experienced by members of the community are presented for professional attention. This phenomenon has been referred to as the "symptom iceberg". This paper provides preliminary data on the symptom iceberg with respect to oral and facial pain. It uses data obtained by means of a survey of a sample of the Canadian population, to fill a gap in the dental literature.

Just under 40 per cent of those responding to the survey reported some oral or facial pain in a four-week reference period. Less than half of these had seen a dentist or physician about their pain. The reported severity of the pain was not related to treatment-seeking; those with severe pain were no more likely to have received professional attention. Variables associated with treatment-seeking were explored using bivariate and multivariate analyses. These analyses revealed that age, duration of pain and the impact of the pain in terms of sleep disturbance were the most important of those examined.

The clinical iceberg is important in that it documents one facet of unmet need for dental care. It also raises the possibility that treated cases of a disorder may not be representative of the population of sufferers as a whole. Studies of treated cases may then introduce systematic

biases into our understanding of oral disorders. Finally, the question of who seeks treatment and why is significant in that the decision-making process with respect to treatment-seeking may influence patient expectations of care. For these reasons, the symptom iceberg in dentistry and the behavioral responses to oral symptomatology warrant further research. Δ

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Reprint requests to Dr. Locker.

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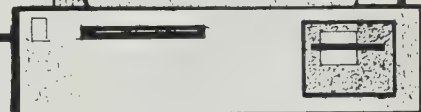
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POTENTIAL PROBLEMS

associated with occupational exposure to

NITROUS OXIDE

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ABSTRACT

Nitrous oxide (N_2O) is a true general anesthetic gas frequently used as a component of balanced anesthesia and sedation techniques for dental and medical procedures. It has undoubtedly been administered to more patients than any other single inhalational agent. However, no agent should escape the scrutiny that may ultimately reveal potential problems and specific complications. Within the past 15 years, nitrous oxide has undergone such scrutiny and a number of issues have been raised regarding its use. This article discusses many of its possible adverse effects. However, most of the papers quoted involve in vitro animal or retrospective studies and recent evidence casts doubt on the validity of many of these observations. Nevertheless, until further conclusive data are obtained, it would seem prudent that we in the dental profession use techniques that minimize nitrous oxide exposure.

Key words: Nitrous Oxide, Adverse effects, Toxicity, Scavenging, Exposure

SOMMAIRE

Le protoxyde d'azote (N_2O) est un gaz anesthésique utilisé comme élément d'une anesthésie équilibrée et des techniques de sédation lors des traitements dentaires et médicaux. Parmi tous les agents d'inhalation, c'est certainement celui qu'on administre le plus. Toutefois, aucun produit ne doit échapper à un examen minutieux susceptible de déceler d'éventuels problèmes et des complications particulières. Au cours des 15 dernières années, le protoxyde d'azote a fait l'objet d'un examen minutieux. Aussi a-t-on soulevé maintes questions touchant son utilisation. Dans cet article, il est question de ses effets contraires possibles. Il faut noter cependant que la plupart des textes cités s'inspirent d'études faites sur des animaux in vitro ou d'études rétrospectives et que de nouvelles preuves remettent en question la validité de plusieurs de ces observations. Quoi qu'il en soit, avant d'obtenir d'autres données concluantes, les professionnels dentaires devraient être prudents et utiliser des techniques qui minimisent l'exposition au protoxyde d'azote.

Nitrous oxide has long been regarded as a safe and innocuous drug. Its ability to cause a feeling of well being and euphoria has been known since the early 1800's. It was used initially at specially arranged exhibitions where "gentlemen of the first respectability" were invited to "laugh, sing, dance, speak or fight etc. etc." "The object was to make the entertainment in every respect a genteel affair."¹

In 1844, dentist Horace Wells, a nitrous oxide user himself, realized its clinical applications and during the next three years repeatedly demonstrated its usefulness as an anesthetic for various surgical procedures.¹ This began the era of general anesthesia.

It is worth noting that nitrous oxide's potential for abuse was known even in these early times. Dr. Wells became addicted to it and later to ether and chloroform and was the first person to commit suicide under the effects of general inhalational anesthesia.¹

Nitrous oxide has many properties (Table I) which make it an almost ideal agent for sedation and anxiety relief in

the out-patient dental office, and until the last decade or so, it had been regarded as a relatively safe agent for this purpose.

We now have evidence that nitrous oxide may not be as innocuous as was

once thought. As it is a drug, it has potentially adverse effects in addition to those that are beneficial. Because of the manner in which it is administered, we in the dental profession have a greater risk

of manifesting some of these potentially adverse effects unless good nitrous oxide "hygiene" is practised routinely.

TABLE I

Some properties of nitrous oxide that make it useful as a sedative agent for dentists

Low blood gas solubility co-efficient (0.47) hence rapid onset and fast recovery
Low potency (M.A.C. > 100 per cent)*
Mild direct and indirect sympathomimetic actions
Relatively non-depressant to most body systems
Sweet smelling
Non-flammable and non-explosive
Analgesic and amnesic properties
Critical temperature above room temperature
Lack of metabolism (0.004 per cent – 0.04 per cent)
Mode of delivery is relatively simple

* (M.A.C. is defined as the Minimum Alveolar Concentration of a general anesthetic agent required to keep 50 per cent of patients unresponsive to a surgical skin incision)

Review of Literature

Nitrous oxide inactivates methionine synthetase

The main mechanism by which nitrous oxide is thought to exert its toxicity is by its action on certain biochemical processes within the body. By far the most important of these is its ability to inhibit the enzyme methionine synthetase.¹

Methionine synthetase requires folate as a co-factor and utilizes the reduced methyl form of vitamin B₁₂ to synthesize methionine. Nitrous oxide inactivates the vitamin B₁₂ component of the enzyme by irreversible oxidation.² This results in a condition that mimics vitamin B₁₂ deficiency, ultimately resulting in an impairment of DNA synthesis since methionine and folate are required for the synthesis of thymidine from deoxyuridine (Fig. 1).

Recovery of methionine synthetase activity appears to be slow.³ It does not parallel the rapidity with which nitrous oxide levels in tissues fall. It occurs over days rather than minutes, since it probably depends on the provision of new vitamin B₁₂ and the synthesis of new methionine synthetase. A very sensitive test for measuring the inactivation of this enzyme is the deoxyuridine (dU) suppression test. Bone marrow incubated with ³H-labeled thymidine incorporates it into DNA through a so-called salvage pathway. This incorporation decreases to less than 10 per cent of control by the addition of large quantities of deoxyuridine to the reaction mixture. Deoxyuridine suppresses the incorporation of the added thymidine because of the conversion of deoxyuridine to thymidine (the synthetic pathway). However, if synthesis of thymidine from deoxyuridine is impaired, incorporation of ³H-labeled thymidine remains high despite the addition of deoxyuridine.¹

Epidemiological Survey

In a retrospective epidemiological survey of over 30,000 dentists and 30,000 chairside assistants, Cohen et al.⁴ compared the incidences of spontaneous abortion, congenital abnormalities in offspring, hepatic disease and renal disease among exposed, non-exposed and indirectly exposed persons. Many of the observations arising from Cohen's study have formed the basis of more recent investigations into the potential toxicity of nitrous oxide.

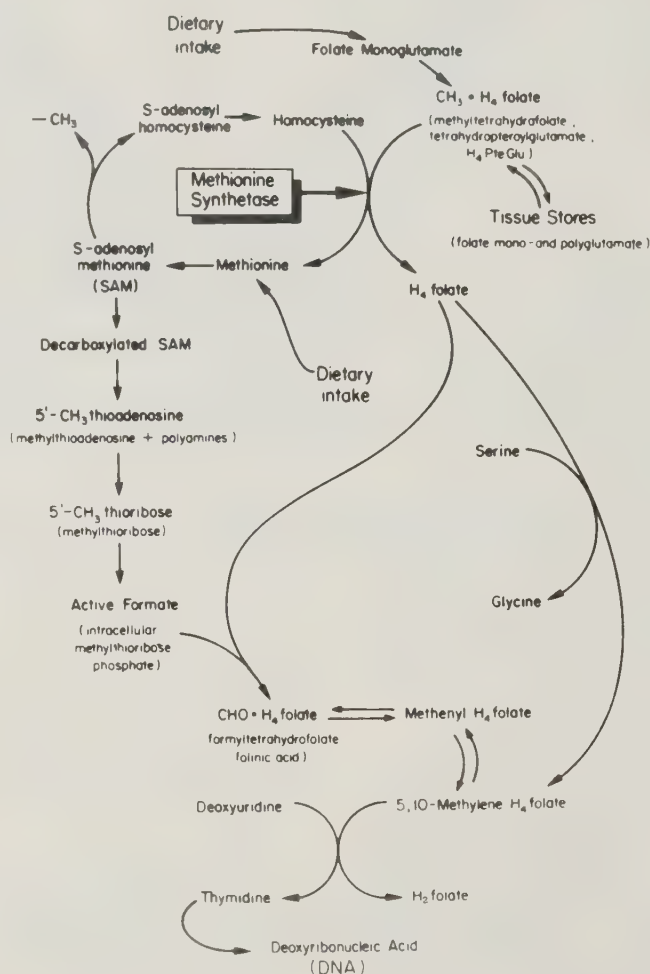


Fig. 1. Details of the reaction immediately affected by nitrous oxide. The inactivation of methionine synthetase by nitrous oxide can lead to a decrease in the availability of methionine and DNA (from Eger, 1985).

Cohen and his colleagues conducted a postcard survey in which 107,771 responses were obtained from U.S. dentists. This permitted development of a comprehensive mailing list and establishment of a sampling frame for a questionnaire survey. Two groups of approximately 15,000 users of inhalational anesthetics and 15,000 non-users were obtained.

A two-page questionnaire was developed asking for detailed information about type of inhalational agents used, yearly usage during the decade between 1968-1978 and hours of use per week during each year of that period.

Information regarding smoking habits (past five years), usage of mercury, general health problems and specific diseases experienced by respondents during the 10 years was requested. Information about pregnancy outcome of the dentist or, if male, his spouse, was also requested. In addition, the questionnaire asked each dentist to supply the names of assisting personnel so that they could be sent a specially prepared questionnaire. All questionnaires were edited for obvious errors, missing values and ambiguities and were re-edited by computer to verify accuracy and eliminate any discrepancies. Excluded from the survey analysis were persons over 65 years and those who reported working only in a hospital setting.

During analysis of pregnancy outcomes, spontaneous abortion was defined as loss of the product of conception before the twentieth week of gestation. Pregnancies terminated by therapeutic abortion and those where both the father and mother were exposed to anesthetics were excluded. The rate of spontaneous abortion was reported as the number of cases per 100 reported pregnancies during the past 10 years. The rate of congenital abnormalities was based on the number of living babies born with one or more non-skin abnormalities per 100 births.

With regard to pregnancy, levels of anesthetic exposure were determined as follows: light exposure to anesthetics was defined as 1-8 hours of exposure per week and heavy exposure was defined as an excess of eight hours per week. The non-exposed group was restricted to those who did not report anesthetic exposure in any of the years before and including the year of conception.

In analyzing the incidence of disease, rates were based on the number of cases within the past 10 years per 100 respondents. The levels of exposure were calculated by cumulative levels of exposure for the past decade, where the

light exposure group included those who reported exposure from 1-2,999 hours in the past decade and if greater than 3,000 hours, were considered to be heavily exposed.

Statistical approaches were standardized by adjusting to significant covariates. In analyzing pregnancy, maternal age, maternal smoking history and history of previous spontaneous abortions or congenital abnormalities were used as the adjusting variables. In comparing disease, age and smoking history of the respondents were used for adjustment.

Results were also computed separately for those exposed to nitrous oxide solely and those (18.7 per cent of respondents) who reported exposure to other agents. When compared with non-users, the results for the group exposed only to nitrous oxide were essentially the same as those reported for the group exposed to combined anesthetics.

Spontaneous Abortion and Congenital Birth Defects

Cohen's group noted a significant 50 per cent increase in the incidence of spontaneous abortion among wives of dentists if the dentists were heavily exposed to inhalational anesthetics during the year prior to conception (Fig. 2). Since the wives did not report direct exposure, it was concluded that the abnormality would have to be in the sperm or semen. An increase in spontaneous abortion among wives of male anesthetists exposed to trace anesthetic agents in

hospital operating rooms was not observed in a study by Knill-Jones et al.⁵ This may reflect the considerably higher concentrations of waste gases in the dental operating rooms as compared with hospital operating rooms.

They also noted a significant 1.7-2.3 fold increase in the rate of spontaneous abortion among female chairside assistants directly exposed to anesthetic gases in the year prior to conception (Fig. 2). Women exposed solely to nitrous oxide showed a doubling in the rate of spontaneous abortion compared to those not exposed.

In summary, both paternal and maternal exposure indicate statistically significant increases in spontaneous abortion when comparing the groups who were exposed to those who were not exposed to nitrous oxide.

Effects on Spermatozoa

A study by Kripke et al.⁶ suggests that the numbers of mature spermatozoa decreased and that abnormal multinucleated forms appeared in male rats that breathed 20 per cent nitrous oxide either for eight hours a day (the intermittent group) or 24 hours a day (the continuous group) for up to 35 days maximum. Furthermore, injury to the seminiferous tubules was found in some animals by the second day and by the fourteenth day such damage was found in all animals in both experimental groups. Gremigni et al.⁷ reported similar results in the testes of rats exposed to 20 per cent nitrous oxide continuously for seven weeks.

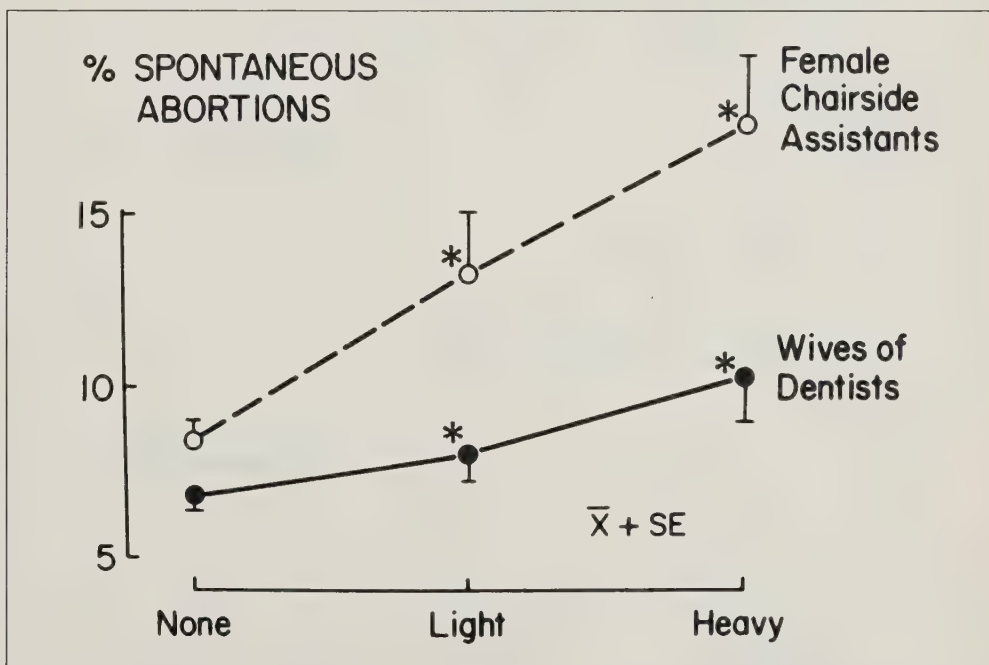


Fig. 2. The incidence of spontaneous abortion per 100 pregnancies increased significantly ($p < 0.02$ in all cases; see asterisks) in chairside assistants and wives of dentists who were occupationally exposed to nitrous oxide without other inhaled anesthetics in the year before conception (from Eger, 1995).

Other animal studies involving mice have failed to demonstrate adverse effects of nitrous oxide on spermatozoa.^{8,9}

In the only published study conducted with humans, Wyrobek et al.,¹⁰ reported no significant abnormal alterations in shapes of sperm. However, anesthesiologists who were tested in this study all worked in properly scavenged operating suites where the exposure to nitrous oxide averaged less than 50 parts per million (ppm).

Watson¹¹ showed that vitamin B₁₂ levels were low in the semen of men with a high percentage of morphologically abnormal sperm as compared to men with normal sperm. It has also been observed that vitamin B₁₂ levels were lower than normal in patients with hypospermia and azoospermia.¹² It is thus inviting to speculate that the reportedly high incidence of infertility and undersirable reproductive outcomes in those occupationally exposed to anesthetic gases may

be related to the role of nitrous oxide in some metabolic process involving vitamin B₁₂ in the germ cell, mature spermatozoa or oocyte.

Cohen et al.⁴ noticed a significant 1.5-fold increase of congenital abnormalities from control in the offspring of female chairside assistants who were exposed to nitrous oxide alone (Fig. 3). The data are significant for the group of light users of anesthetics and the combined level group (i.e., those exposed to nitrous oxide plus another agent). Congenital abnormalities were not examined by organ system. However, children of chairside assistants exposed to nitrous oxide in the light-user group showed a significant two-fold increase in the incidence of musculoskeletal disease as compared to children born to the non-exposed chairside assistants. Wives of exposed dentists did not show a significant increase of congenital abnormalities in their offspring.

Hepatic Disease

Nitrous oxide has been shown to decrease methionine synthetase activity in the livers of rats,¹³ mice,¹⁴ and humans.¹⁵ In all cases, the decrease in the level of this enzyme appeared to be proportional to the duration of exposure.

Cohen et al.⁴ found that both dentists and their chairside assistants have a significantly higher incidence of liver disease when exposed to nitrous oxide. This increase is 1.7-fold for the heavily exposed male dentists and 1.6-fold for similarly exposed female chairside assistants (Fig. 4).

The livers of mice exposed to 20 per cent nitrous oxide continuously for up to 35 days demonstrated a higher incidence of focal inflammatory lesions, consisting of portal infiltrates and midzonal granulomas but not hepatic necrosis.¹⁶

The fact that nitrous oxide inactivates liver methionine synthetase has been discussed. What is not known conclusively, however, is whether this or other factors in the dental operator causes clinically significant hepatic injury.¹

Renal Disease

Cohen et al.⁴ state that chairside dental assistants show significant increases in the incidence of renal disease, such as urinary tract infections, at light to heavy levels of exposure and that dentists have a significant increase in renal lithiasis at heavy levels of exposure (Fig. 5). Furthermore, Stevens et al.¹⁶ found that calcification of distal renal tubules occurred more frequently in mice exposed to 20 per cent nitrous oxide for up to 35 days as compared to the control group.

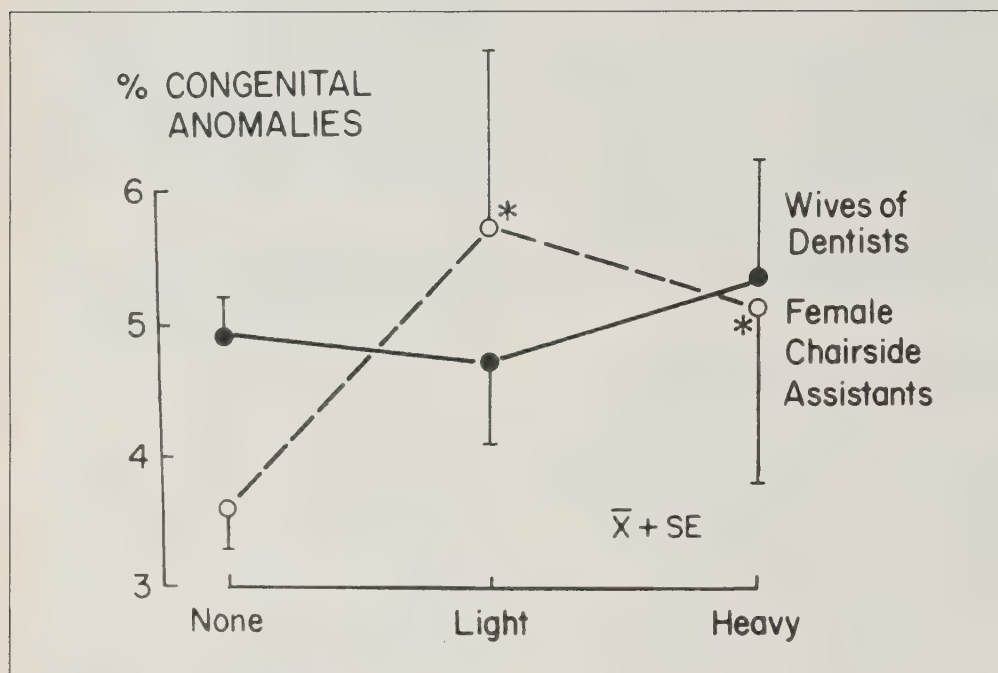


Fig. 3. Exposure of female chairside assistants to nitrous oxide in the absence of other inhaled anesthetics increased the incidence of congenital anomalies in their offspring ($p < 0.05$; see asterisks). The incidence in the offspring of wives of dentists exposed to nitrous oxide did not differ from the incidence in wives of non-exposed dentists (from Eger, 1985).

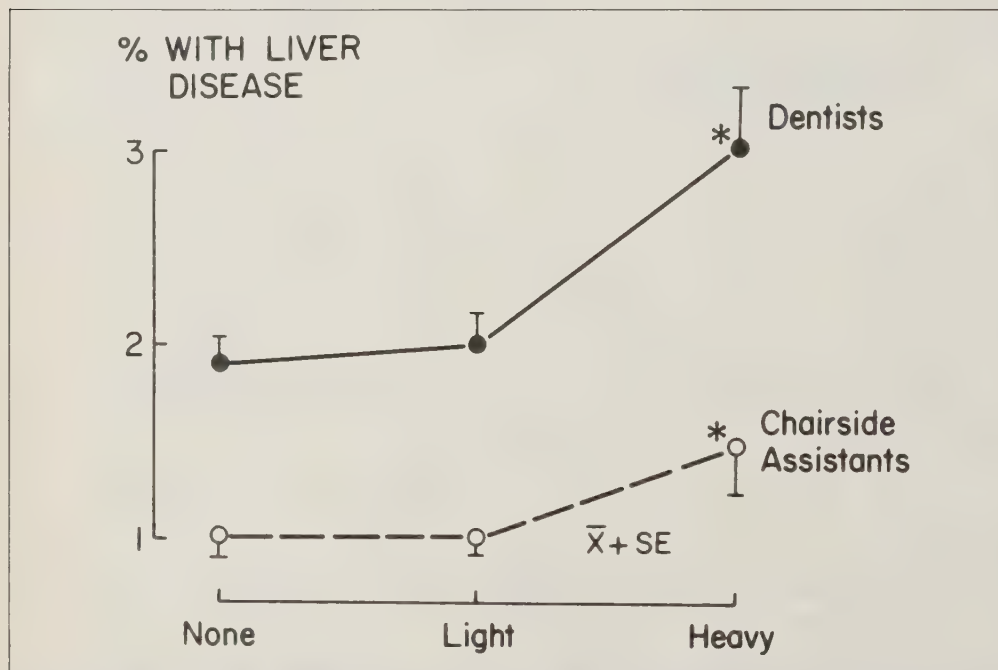


Fig. 4. Exposure to nitrous oxide for more than 3,000 hours per 10-year period was associated with a significantly ($p < 0.01$; see asterisks) increased incidence of liver disease in both dentists and their chairside assistants (from Eger, 1985).

There is little evidence to support any theory that nitrous oxide has nephrotoxic properties. However, Cohen's epidemiological survey makes it somewhat suspect.

Central Nervous System

Numerous case reports have been published concerning the potential for nitrous oxide to cause effects in the nervous system of abusers of nitrous oxide and those chronically exposed to it.¹⁷⁻¹⁹ Signs have developed as early as three months after initial exposure.²⁰ By virtue of its effects on vitamin B₁₂ as previously discussed, nitrous oxide can produce a neuropathy indistinguishable from that associated with pernicious anemia.²¹

Monkeys exposed to 15 per cent nitrous oxide developed ataxia within a few days, which was reversible if the vapour was withdrawn soon after the development of symptoms. It became permanent when nitrous oxide administration was allowed to continue for more than two weeks.²¹ Histologically, the spinal cords showed degeneration of both the myelin sheaths and the axis cylinders in the posterior columns and in the lateral and anterior corticospinal and spinocerebellar tracts. Frequent peripheral polyneuropathies of a distal "glove-stocking" distribution were also reported.

The following symptoms have appeared in humans and have been attributed to long-term exposure to nitrous oxide.^{18,20,22,23} These initially include numbness, paresthesias, ataxia and clumsiness in the extremities. With continued exposure, signs of weakness, disturbances in gait, impotence and loss of sphincter control can occur. As can be seen, symptoms may be sensory, motor or autonomic in nature and may therefore mimic those of multiple sclerosis.

This frightening list of symptoms shows that these neurologic changes may range from mild to severe and sometimes are incompletely reversible even after the source of exposure is eliminated.²¹ Symptoms have been followed up for as long as three years by Dinn and his co-workers, and although gradual recovery occurs in most cases, some damage may be permanent, especially that in the central nervous system. Symptoms may manifest themselves in as little as three months or may take as long as five years.²¹ Early changes may be subtle and often go unrecognized.

Neurologic diseases of all types were increased significantly in both dentists and chairside assistants exposed to nitrous oxide (Fig. 6). Furthermore, exposure of dentists and chairside assist-

ants increased the incidence of a variety of neurologic diseases in a dose-related fashion (Figs. 7 and 8).

Effects on the Haematologic System

In the 1950's, a common treatment for patients with severe tetanus was to use 50 per cent nitrous oxide plus other drugs such as chlorpromazine and d-tubocurarine. The nitrous oxide/

oxygen mixture was administered to provide a "safe" mild narcosis since treatment often lasted for several weeks. Five to seven days after the initiation of treatment with nitrous oxide, patients developed bone marrow depression that was initially thought to be due to the other drugs and not to the nitrous oxide. However, tetanus patients who did not receive nitrous oxide, did not develop bone marrow depression. Hence, the

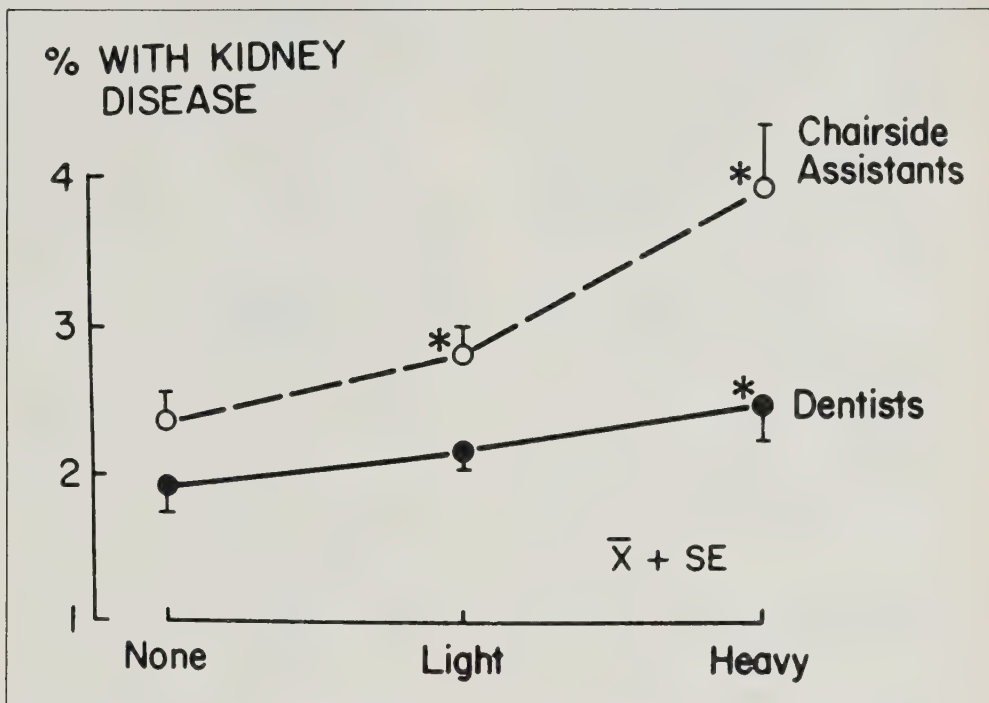


Fig. 5. Chairside assistants exposed to nitrous oxide alone developed significant renal disease at both light ($p < 0.05$) and heavy ($p < 0.01$) levels of exposure (asterisks). Dentists exposed to heavy levels only showed a significantly higher incidence of kidney stones (from Eger, 1985).

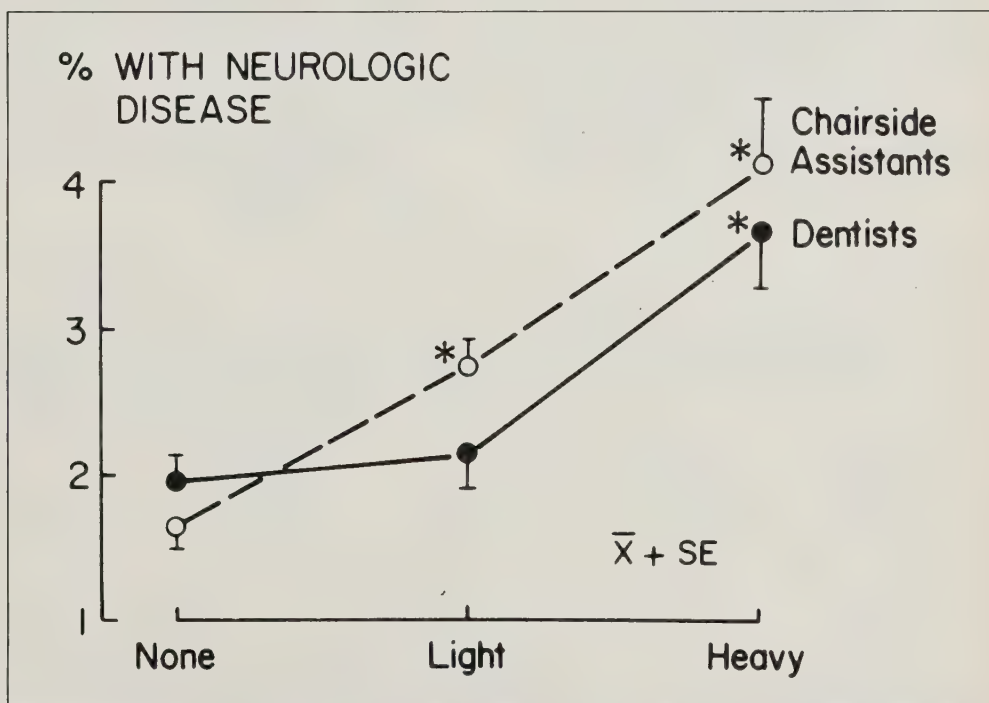


Fig. 6. Neurologic disease of all types was increased significantly ($p < 0.01$; see asterisks) in both dentists and chairside assistants exposed to nitrous oxide (from Eger, 1985).

bone marrow depression and granulocytopenia that occurred was thought to be the result of prolonged exposure to nitrous oxide.²⁴ In fact, in another

study,²⁵ 22 patients undergoing valve replacements or coronary artery grafts were randomly allocated to three groups and were ventilated for 24 hours. Eight

patients received 50 per cent nitrous oxide continuously for 24 hours, nine received 50 per cent nitrous oxide only during the operation (5-12 hours) and thereafter 35-50 per cent oxygen for the remainder of the 24 hour period, and five patients (control group) received no nitrous oxide at all. Of the eight patients who received nitrous oxide continuously for 24 hours, all had megaloblastic bone marrow aspirates at the end of the period. In one patient, these changes developed in as early as six hours. Of the nine patients who received nitrous oxide for the period of the operation only, three had mildly megaloblastic erythropoiesis after 24 hours. The control group all had normoblastic bone marrow aspirates. All abnormal bone marrow aspirates resolved within five days.

Skacel et al.⁶ studied nine patients undergoing aortic surgery followed by 24 hours of postoperative mechanical ventilation utilizing 70 per cent nitrous oxide. They compared their results with a control group who underwent similar surgical procedures in which the anesthetic and postoperative ventilation did not include nitrous oxide. They noted the number of hypersegmented neutrophils began to increase on the fifth postoperative day, peaked at 7-9 days and fell toward preoperative levels thereafter. There was no change in neutrophil segmentation in the control group. They surmized that these abnormal neutrophils originated from a cohort of early granulocyte precursors exposed to nitrous oxide. As well they noted a progressive rise in serum folate during the 24-hour exposure and a simultaneous fall in serum methionine levels. Changes became significant ($p < 0.05$) for both parameters at 24 hours. Similar changes were not observed in the control group. Levels of folate and methionine had returned to control levels within 24 hours following cessation of nitrous oxide administration. Serial bone marrow aspirates showed gross megaloblastic changes after 24 hours of exposure and reverted to normoblastic by one week. The nature of the megaloblastosis was explored by the deoxyuridine (dU) suppression test. Abnormal utilizations of deoxyuridine (a precursor of thymidine) was noted in all patients following nitrous oxide administration; the result was improved on by the in-vitro addition of vitamin B₁₂, suggesting an impairment of B₁₂ metabolism. Deoxyuridine suppression increased progressively during the entire administration period. By seven days following nitrous oxide exposure, this test had become normal in all patients. They also noted that neutrophil

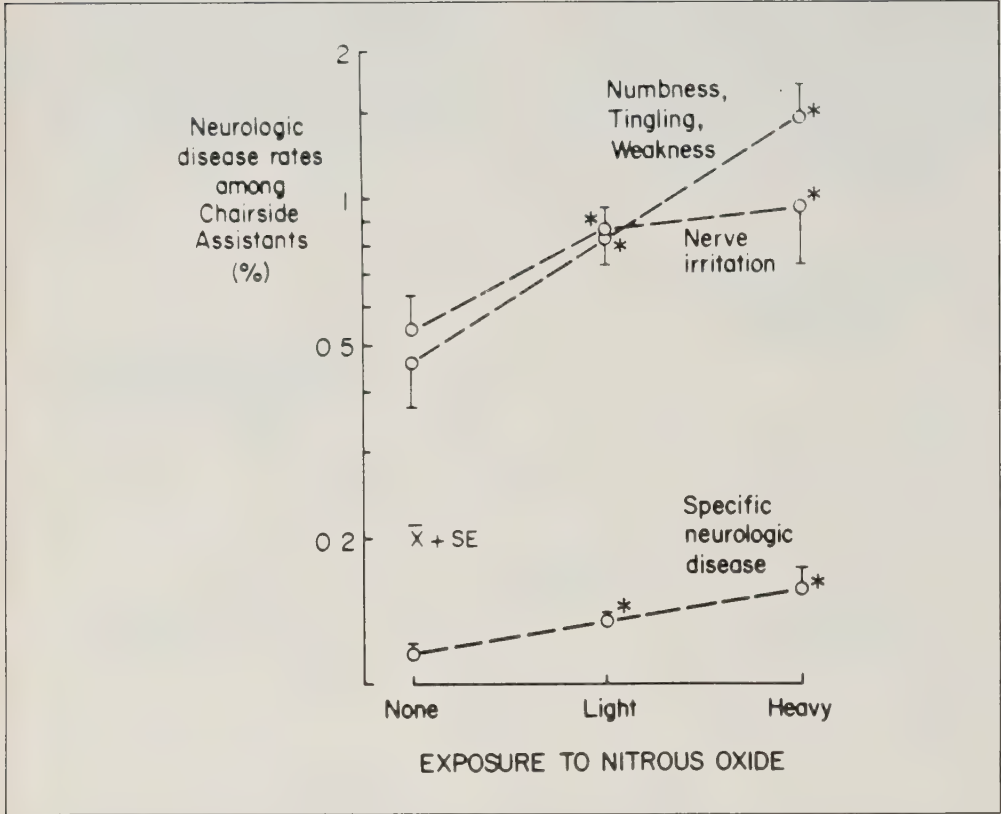


Fig. 7. Exposure of chairside assistants to nitrous oxide also significantly ($p < 0.05$; see asterisks) increased the incidence of a variety of neurologic diseases in a dose-related fashion (from Eger, 1985).

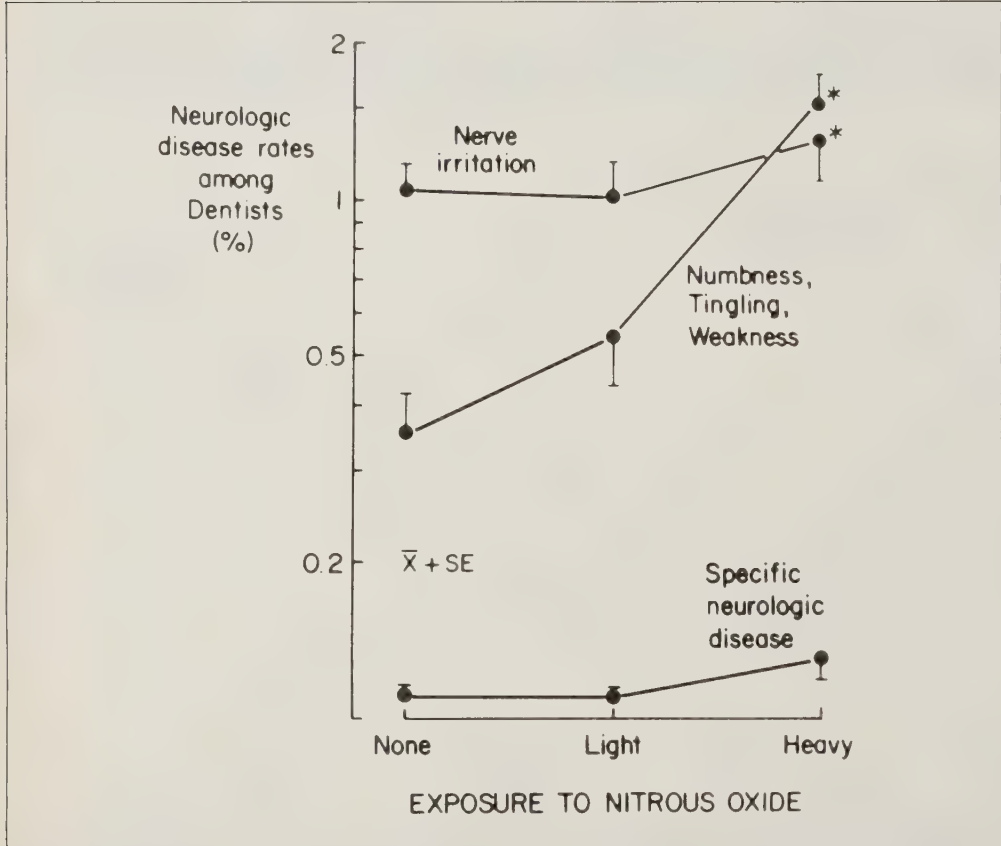


Fig. 8. Exposure of dentists to nitrous oxide significantly ($p < 0.05$; see asterisks) increased the incidence of a variety of neurologic diseases in a dose-related fashion (from Eger, 1985).

counts had fallen about 50 per cent from pre-operative values in the nitrous oxide exposed group by the second to fourth postoperative day. No comment was made with respect to recovery.

On the other hand, Reagan et al²⁷ wondered if patients frequently undergoing general anesthesia for short procedures are at risk for this complication. These authors investigated seven healthy subjects who received 50 per cent nitrous oxide in oxygen and who underwent 30-minute exposures on Monday, Wednesday and Friday for two consecutive weeks (six exposures). They compared blood samples with seven subjects undergoing similar procedures (dressing changes) and anesthetic exposures (except that nitrous oxide was not used), and found no megaloblastic changes in the peripheral blood of either group.

Studies involving several different animal species have confirmed that nitrous oxide does in fact depress bone marrow activity. As exposure to nitrous oxide continues, mitotic activity in bone marrow cells ceases completely, suggesting nitrous oxide's ability to interfere with DNA synthesis.^{28,29} As a consequence of exposure, the abnormalities in bone marrow appear to be due to an interference with enzymes containing vitamin B₁₂ which are necessary for the DNA synthesis required to form blood cells. The long-term clinical significance of these effects is not known.

Effects on cell mediated immune responses

Immunologic defence mechanisms are also affected by nitrous oxide. In order to mount a response to potentially harmful foreign substances, the body's immune system must be capable of producing, mobilizing and depositing a sufficient number of leukocytes at the site of infection so that the foreign body may be phagocytosed.

Nitrous oxide has been shown to interfere with leukocyte function. Exposure of human neutrophils to 25 per cent nitrous oxide significantly decreases their motility in vitro and exposure to 80 per cent nitrous oxide for two hours exhibits a 22 per cent reduction in chemotaxis.²⁹

The mechanism of this inhibition is unknown but may be due to some unidentified chemical action involving vitamin B₁₂.²⁹ While motility and chemotactic ability of neutrophils is impaired, the cell's ability to phagocytose foreign particles was unimpaired.²⁸ It is worth noting that chemotactic recovery does not immediately occur on withdrawal of nitrous oxide.¹

Thus, nitrous oxide tends to reduce the production, motility and chemotactic responses of both monocytes and neutrophils. If cells reach the site of infection, their ability to kill bacteria is apparently not impaired.

Parts per million (ppm) of nitrous oxide in the unscavenged dental operatory

Millard and Corbett³⁰ have determined the ppm of nitrous oxide in three zones of a dental operatory with the dimensions of 13' x 11' x 8'. Zone 1 was 2 inches in front of the dentist's nose, zone 2 was 2 inches in front of the dental assistant's nose and zone 3 was 5 feet above the floor in the far left hand corner of the room away from the operatory entrance. The room had no special air-conditioning system such as that found in an operating room. Operative dental procedures ranged from 20-90 minutes in length and samples were collected every 15 minutes. Nitrous oxide was administered at 4L/min. and oxygen at 3L/min. These authors found that the concentration of nitrous oxide rose in proportion to the duration of administration (Table II). The dentist received the highest concentration (6,767 ± 2,466 ppm, at 60 minutes) and the dental assistant also received a high concentration (5,867 ± 1,685, at 60 minutes).

In March 1977, the U.S. Department of Health, Education and Welfare, at the National Institute of Occupational Safety and Health (NIOSH) did a study on the occupational exposure to waste anesthetic gases and vapours.³¹ With regard to nitrous oxide, they found adverse effects on human volunteers, such as decrements in performance, cognition and audiovisual ability and dexterity at exposure levels of 500 ppm. Furthermore, at levels as low as 50 ppm, audiovisual

decrements were observed. Similar decrements were not observed at 25 ppm.

Based on the above observations, NIOSH recommends that the permissible level of exposure should be a maximum concentration of 25 ppm in an eight-hour time weighted average (8-TWA).

In a recent survey of 27 scavenged and unscavenged dental operatories, the median concentration inside the dentists' breathing zone was found to be 409 ppm. The major sources of nitrous oxide exposure to dental personnel were identified as leaks around the nasal mask and exhaled air from the patient's mouth. None of the operatories investigated met the level recommended by NIOSH.³²

High Levels Related to Methods of Administration

When we consider how we administer nitrous oxide in dentistry, it is not surprising that such high levels can be attained. When comparing the dental environment with the hospital operating room environment we can see some significant differences. In the hospital operating room, the recent introduction of scavenging devices has reduced the levels of nitrous oxide from 3,000 ppm to 50 ppm in the anesthetist's breathing zone.³³

Patients anesthetized in the operating room are usually intubated. Provided that a cuffed endotracheal tube is used and the cuff is adequately inflated, the anesthetic circuit between patient and machine is virtually closed. Situations in which the patient is breathing via a tight fitting full face mask, either held manually or aided by a head harness, also provides minimum leakage. Anesthetic gases are thus exhaled directly into the anesthetic scavenging device and evacuated to the outside with very little leakage occurring.

TABLE II

Mean concentrations of nitrous oxide after 15, 30, and 60 minutes of administration of nitrous oxide-oxygen for sedation (from Millard and Corbett, 1974).

Zone	15 min		30 min		60 min	
	ppm	SE	ppm	SE	ppm	SE
Dentist	3833 ± 1953	(6)*	4970 ± 2065	(5)	6767 ± 2466	(3)
Dental assistant	1920 ± 241	(5)	3120 ± 505	(5)	5867 ± 1685	(3)
Peripheral room air	1750 ± 353	(2)	2833 ± 611	(3)	3100 ± 141	(2)

*Numbers in parentheses indicate number of samples tested.

Operating rooms, unlike most dental operatories, are significantly larger in size. Gases that do escape do so into a much larger volume, making the concentration per unit area much less than that found in the dental operatories.

Finally, exhaust systems in hospital operating suites provide full fresh air inflow with no recirculation. In fact, hospital building codes require 15-25 total fresh air exchanges per hour in the operating room. Installation of such a system would be an expensive venture for the dental practitioner.

Sources of Nitrous Oxide Contamination in the Dental Operatory

Below is a list of the possible sources of nitrous oxide contamination in dentistry:

1. **The anesthetic equipment**
 - a) Worn wall connectors
 - b) Deformed compression fittings
 - c) Flow meter leakage
 - d) Defective or missing seals
 - e) Worn or defective reservoir bags
 - f) All hoses and the connectors
 - g) Leakage from relief valve on the nasal mask
 - h) Too high flow rates
 - i) No scavenging devices in operation
2. **The patient (non-intubated)**
 - a) Leakage from perimeter of nasal mask
 - i) Inadequate mask size for patient
 - ii) Torn, defective or deformed mask
 - iii) Patient's nasal structure (flat bridge of nose)
 - b) Mouth breathing
 - c) Conversation between patient and operator
3. **The dental operatory**
 - a) Small cubic capacity, hence higher concentration per unit area
 - b) Poor air circulation
 - c) Lack of proper ventilation and air-conditioning

How Can We Keep Nitrous Oxide Levels to a Minimum?

Below is a list of methods that should be employed in any dental operatory in which nitrous oxide is routinely administered so as to reduce the likelihood of all dental personnel being chronically exposed to potentially hazardous levels:

1. All anesthetic equipment used should be designed to avoid leakage.
2. Low leakage performance requires preventive maintenance of equipment regularly.
3. Leakage test should be performed before each use of the equipment

4. Waste anesthetic gases should be scavenged from all breathing circuits and vented outside the building.
5. Low leakage work practices by dentists:
 - a) Non-excessive flow rates
 - b) Proper mask size
 - c) Good mask seal by tightening to fit snugly on patient's nose
6. Analysis of operatory air periodically.
7. Minimize mouth breathing:
 - a) Avoid or minimize conversation with patient
 - b) Use rubber dam routinely
 - c) Place oropharyngeal partition if patient will tolerate it (4" x 4" gauze lightly placed in posterior of mouth)
8. Use the minimum concentration of nitrous oxide that will provide good patient management and conscious sedation.
9. Ensure good ventilation in the operatory.
10. Keep the duration of each administration to a minimum.
11. The continuous flow Mapleson A classification, McGill circuit is not only the best delivery system for the spontaneously breathing patient but it also provides the best economy of gases.³⁴
12. Avoid the use of nitrous oxide entirely!

Scavenging

It has been recommended by the ADA and the ASA that control measures be instituted to maintain the lowest reasonable achievable concentration of inhalational anesthetics in the operatory whenever these are administered.³⁵

Scavenging is an attempt to remove the anesthetic gases and vapours from the environment. There are several methods (see below) whereby the gases having been collected can be disposed of.

Concentrations as low as 50 ppm can be attained when these control measures are implemented.³⁶ In fact, in a pilot study using local exhaust ventilation in a dental operatory, Jacobs and Middendorf,³⁷ claimed that peak exposures to nitrous oxide declined to 70 ppm from over 600 ppm with the time weighted average below below the NIOSH recommended level of 25 ppm. Their results suggest that nitrous oxide exposures can be greatly reduced if dental operatories are equipped with local exhaust ventilation.

The suction system can be used and since all dental operatories have a suction system, this is a very simple and economical method of minimizing nitrous oxide

pollution in the operating environment. The suction system must be the type that evacuates to the exterior of the premises. Free-standing portable electrical suction devices are useless in that the gases that are sucked in merely blow out the positive side of the pump and back into the room.

Non-recirculating air-conditioning exhaust ducts of the type found in hospital operating rooms are 100 per cent exhaust. This possibility, ideally, is one of the methods of choice but most feel that it is not practical in the dental environment due to the expense involved in installing such a system.

A passive, non-assisted duct to the exterior, simply a hose or a pipe is practical, economical and effective. If the gases can be trapped, they can be removed from the building either by this method or by the suction system mentioned above. A passive tube leading away from the patient and dropped to the floor is simply not acceptable.

The major problem to overcome is how to collect the expired gases from the patient. The ideal system is one that has an inspiratory side and an expiratory side with a series of one-way valves that prevent backing up of the gases into the machine and rebreathing of gases by the patient. Three valves are essential to such a system: a one-way inspiratory valve, a one-way expiratory valve and a one-way valve which will allow air to enter the system but which will not allow gas to leave.

Scavenging and ventilation complement one another, for if the ventilation system (air conditioning) is turned off, despite an active scavenging system, the levels of nitrous oxide may rise to 100 ppm from 25 ppm.³⁸ Thus, it is still important to have adequate ventilation in the operatory.

The other difficulty is the problem of obtaining an adequate seal with a nasal mask. Many manufacturers have recognized this problem and have devised elaborate and sometimes cumbersome methods of not only suctioning away expired gases but also trapping leaked gases from the periphery of the mask including those from the mouth. These methods reduce still further the degree of pollution in the dental environment. However, it is not entirely possible to eliminate the problem in this way. A possible solution is the use of additional exhaust ventilation with a 300 mm. wide nozzle placed horizontally 200 mm. or less in front of the patient's mouth with an evacuation flow rate of 200 m³/hr. (33 L/min.).³⁹

For a thorough discussion and comparison of the various systems available, the

reader is referred to a study by Allen.³³ He recommends the air-powered version of the Porter system which is attractively engineered and gave very good results. Furthermore, it was the least noisy of all the active systems that were investigated.

Decreasing the risks of exposure to trace levels of nitrous oxide is not a simple procedure. It depends on the interaction of proper room ventilation, scavenging type anesthetic equipment and for a further reduction, the addition of a local exhaust ventilation system in close proximity to the patient's airway.

Discussion

Based on the information available, animal and epidemiologic studies only suggest rather than prove that trace levels of nitrous oxide may have adverse effects on various body systems. One possible mechanism is by the inactivation of methionine synthetase. The many studies that have been discussed in this essay provide acceptably firm evidence of this fact. Inactivation of this enzyme by nitrous oxide in brain, liver and other tissues may reduce the body's capability to produce methionine for the ultimate production of DNA. Although the duration of inactivation is unknown, different levels of depression of DNA synthesis may be due to the exposure of different concentrations of nitrous oxide for variable lengths of time.

The extensive epidemiologic survey by Cohen et al. regarding spontaneous abortion and congenital birth defects contains no reference to the specific abnormalities within the review series or to familial defects within the communities studied, including the closeness of consanguinity of the parents or to the ethnic origin of the parents. Furthermore, minor defects may not have been drawn to the attention of those who have constructed this large survey. The possibility exists that there might have been a local epidemic (i.e., rubella or influenza) during a period of the survey. In addition, the investigators must rely on responder recall of events and significant omissions such as drug abuse, venereal disease or exposure to other toxic or caustic (teratogenic) agents. It is therefore notoriously difficult to gather information accurate enough to establish a cause-effect relationship from such a study. Brodsky,⁴⁰ in a classic article, raises the question of genetic variation being responsible for altered susceptibility to many agents, leading to possible teratogenic effects. Miller et al.⁴¹ suggest that approximately 40 per cent of pregnancies end in spontaneous abortion and that it is likely that, in the absence

of specific investigations, in half of such cases the mother will not have realized she had conceived.

Duncan et al.,⁴² whose data were derived from a survey of the entire population of Manitoba, found the incidence of anomalies among 2,565 pregnancies in which a surgical procedure had been performed in the first or second trimester was 1.68 per cent and that among a similarly sized control group was 1.52 per cent. In the study group, nitrous oxide was used, while in the control group a regional technique was used. Crawford and Lewis⁴³ who analyzed the outcome of 375 cases (383 fetuses) of cervical cerclage and 58 other operations (59 fetuses) conducted under general anesthesia, which included the administration of nitrous oxide of at least 33 per cent, failed to reveal a single instance in which nitrous oxide could have been clearly indicted as a cause of fetal abnormality. The incidence of abortion and of low birth weight babies in the series was identical to that in a series conducted under regional anesthesia (115 fetuses).

Although evidence obtained epidemiologically is suggestive of the fact that the offspring of pregnant humans chronically exposed to trace levels of nitrous oxide may develop anomalies, a causal relationship has yet to be ascertained. In fact, in a recent editorial, Mazze⁴⁴ states that it would be difficult to quarrel with the overall conclusions of Crawford and Lewis,⁴³ that the administration of nitrous oxide to pregnant patients does not cause fetal abnormalities or lead to an increased incidence of abortion or of low infant birth weight. Thus, the chance of inducing spontaneous abortion should not deter the anesthetist from administering nitrous oxide to pregnant patients. Until data are presented to disprove these views, the continued use of nitrous oxide during pregnancy is rational.

It has been shown in the literature that there is a dose-related incidence of non-specific and specific neurological disease in humans who are chronically exposed to trace levels of nitrous oxide. Again, a causal relationship of exposure to trace levels and neurologic disease has yet to be shown. Many cases in the literature point to chronic abuse of nitrous oxide rather than chronic exposure to trace amounts of this agent as being responsible for the appearance of neurological symptoms.^{17,19,20-23} However, there are also cases in the literature in which dentists who were exposed to nitrous oxide through leaks in their delivery systems or lack of scavenging devices did in fact develop reversible neurological symp-

toms.^{18,23} The simple truth is that nobody really knows how much is too much or how much is required to produce neurological symptoms.

The incidence of renal and hepatic disease has been shown to be higher for dentists and their chairside assistants who use nitrous oxide in their practices. The incidence is highest for those who make the greatest use of nitrous oxide and it is again possible that this could be the result of its abuse or exposure to hepatotoxic or nephrotoxic agents rather than exposure to trace amounts of the gas.

Similar views can be put forth regarding the effects of nitrous oxide on the hematologic system. Certainly it has been shown that high-dose exposure for several hours will produce levels of bone marrow depression in humans.^{24,25} However, it has yet to be shown conclusively that chronic exposure to trace levels of nitrous oxide will cause significant hematologic changes. In fact, a recent paper states that intermittent low doses of N₂O do not cause megaloblastic anemia.²⁷ A major criticism of this paper, however, is the authors' failure to employ the deoxyuridine suppression test — a very sensitive test for the indirect measure of methionine synthetase and oxidized vitamin B₁₂. However, it should be noted that the debilitated patient who has depleted B₁₂ stores may be at risk. Nunn and Chanarin⁴⁵ and Reagan et al.²⁷ suggest that folate loading prior to nitrous oxide administration may be protective for these patients. Similarly, because of the possible effects on the immune system, one could suggest cautious use of nitrous oxide in the immunocompromised patient. However, in a study by Algie et al.,⁴⁶ following a paravertebral surgical incision, mature, female rats under ether anesthesia were exposed to either 3 per cent nitrous oxide continuously for 48 hours, or 50 per cent nitrous oxide, four hours each day for seven days. For each exposure group, a similar number of rats was exposed to atmospheres containing no nitrous oxide. Wound healing was assessed by measurement of breaking strengths of wound samples. No statistically significant influence on breaking strength could be attributed to nitrous oxide following either exposure sequence.

The evidence is not complete on the issue of whether to continue the use of nitrous oxide in dentistry as it has been used in the past. Certainly the most important question that needs to be answered is: Do the benefits of nitrous oxide use in dental practice outweigh the possible risks of chronic exposure to this

agent by dental personnel? The lowest concentration of nitrous oxide that offers any risk to the dentist and his ancillary personnel after long-term exposure is unknown.⁴⁷

There is still much we do not know about the effects of nitrous oxide exposure. With proper precautions, is it possible to continue the safe use of this agent in dental practice? "One must act before obtaining all the information one would like to have. To continue to use nitrous oxide is as much an important decision as to abandon its use."¹

Summary and Conclusions

The importance of scavenging is derived principally from retrospective epidemiological examination of people who have been exposed to anesthetic gases and vapours chronically over a long period as a result of their occupations.

The defects of retrospective studies are that they are subject to bias and misinterpretation, hence they are not by their very nature as valid as prospective studies or controlled scientific experiments. However, from these retrospective studies, the results are very suggestive and from a safety standpoint, should not be overlooked.

Until it is proven beyond a doubt that chronic occupational exposure to nitrous oxide is totally innocuous, we are obligated to take measures to minimize the amounts of this agent to acceptable exposure levels for ourselves and our office personnel.

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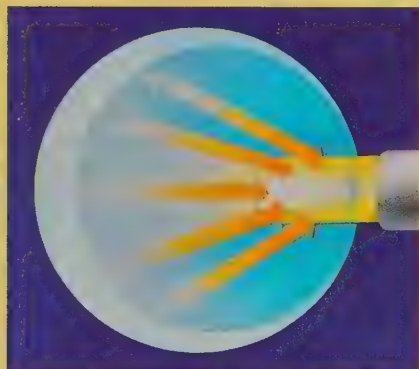
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► THE PROBLEM:

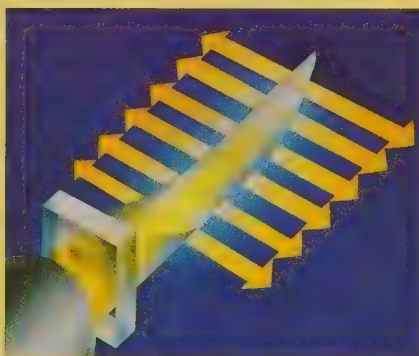
All composites shrink towards the light source upon curing with the most significant shrinkage occurring furthest from the light source. In certain areas, this shrinkage force may exceed the bond strength of the composite to the tooth. Therefore, when curing posterior composites from the occlusal surface, marginal gaps at the proximal gingival margin have been almost unavoidable until now.

► THE SOLUTION:

You can help eliminate marginal gaps by curing your restorations from the bottom up with the PREMIER CURE-THRU Reflective Curing Wedge System.

Instead of curing occlusally, first cure at the proximal gingival margin via the CURE-THRU Reflective Curing Wedge. The composite then shrinks toward the proximal gingival margin, ensuring a tight seal. *"This results in significantly improved proximal margins and reduces the risk of recurrent caries resulting from a poor tooth restoration interface."*

Shrinkage at the occlusal surface can be compensated for with additional composite material.

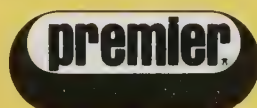


► EXISTING TRANSPARENT WEDGES DO MORE HARM THAN GOOD!

Whereas, transparent wedges can only reflect approximately 10% of the conveyed light, they provide a false sense of security that the restoration is completely cured. Premier Reflective Curing Wedges however, reflect 90% of the light. They have a plastic white interior to actually deflect light at a 90° angle into the proximal surface helping to ensure marginal integrity.

The CURE-THRU Introductory System (#61216) includes 30 each Molar and Premolar Transparent Anatomically Formed Matrix Bands which are extremely thin and can be secured with a Tofflemire-type or Strip-Tite retainer; and 50 each Small and Medium Curing Wedges.

Order through your dealer.



Premier Dental Products Co., Box 111, Norristown, PA 19404 • Premier Dental (Canada) Inc. Scarborough, ONT M1W3K5

(1) OPTIMIZED MARGINAL ADAPTATION OF LIGHT CURED MOD COMPOSITE RESTORATIONS, SWISS DENT 7 (1986) Nr. 3, Swiss Review for Preventive and Therapeutic Odontology and Stomatology, I. Krejci, F. Lutz, B. Luscher, E. Maffioli © 1986 by Premier Dental Products Co. CURE-THRU is a registered trademark of Premier Dental Products Co



METTEZ-NOUS A VOTRE SERVICE !



Le CDSPI est votre organisme et vous propose des services d'assurance, de retraite et d'information. Il appartient aux dentistes et est administré par eux sur une base non lucrative : sa seule mission consiste à répondre à vos besoins dans ces domaines. Appelez donc dès aujourd'hui pour obtenir de plus amples informations et mettez-nous à votre service !

COMPÉTENCE

ACCESSIBILITÉ

DÉTERMINATION



CDSPI

1.800.268.54.18 Provinces de l'Ouest, provinces atlantiques et région de l'Ontario avec l'indicatif régional 807
1.800.268.34.11 Québec et Ontario, sauf pour la région avec l'indicatif régional 807
497.71.17 Toronto et environs



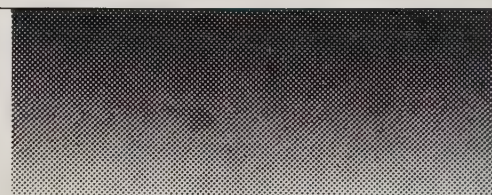
**University of Alberta
Edmonton**

Assistant/Associate Professor Faculty of Dentistry

Applications are invited for a full-time tenure-stream academic position in the Division of Pediatric Dentistry, Department of Stomatology. The position will be effective as of July 1, 1988. General activities include teaching in preclinical and clinical predoctoral courses and involvement in the University Hospital program. The position also requires a demonstrated interest and pursuit of scholarly and research activity. Intramural private practice facilities are available. Applicants should be eligible for licensure in dentistry in the province. Rank and salary are commensurate with education and experience of an Assistant Professor (\$31,612 - \$45,340) or Associate Professor (\$39,629 - \$57,236). In accordance with Canadian immigration requirements, this advertisement is directed at Canadian citizens and permanent residents. Send application including a curriculum vitae and the names of three referees, no later than April 30, 1988 to:

**Dr. C.G. Baker, Chairman
Department of Stomatology
University of Alberta
Edmonton, Alberta T6G 2N8**

The University of Alberta is committed to the principle of equity in employment.



YUKON DENTAL ASSOCIATION

SUMMER '88 CONTINUING EDUCATION PROGRAM June 25 - July 4 1988

Two days of clinical presentations to be followed by a week long canoe trip on the Klondike Trail of 1898, down the Yukon River to Dawson City.

For details write:

**Dr. John Stern
Suite 4, 3089 3rd Ave.
Whitehorse, Yukon Y1A 5B3**

Please note: Dates appearing in this advertisement for the January and February issues were incorrect

How BROAD ARE YOUR HORIZONS?

This year the FDI is holding a Joint World Dental Congress with the American Dental Association in Washington, D.C. heralded as the premiere dental meeting of 1988.

If you become an FDI Supporting Member and enroll for the Congress before June 30th, you will make a major saving on the fee.

WASHINGTON, AMSTERDAM, SINGAPORE TRAVEL WITH A PURPOSE

Join dentistry's international fraternity — become a Supporting Member of the Fédération dentaire internationale, your profession's worldwide organization. You will not only help sustain its work for oral health and the practice of dentistry globally, but you will also receive a valuable package of benefits — international dental news, free technical reports, exciting opportunities to travel with a professional purpose, discounts on publications, and membership of that body of dentists distinguished by their international outlook, contacts and knowledge.



WASHINGTON, DC

DENTISTRY:
CARING FOR
THE WORLD

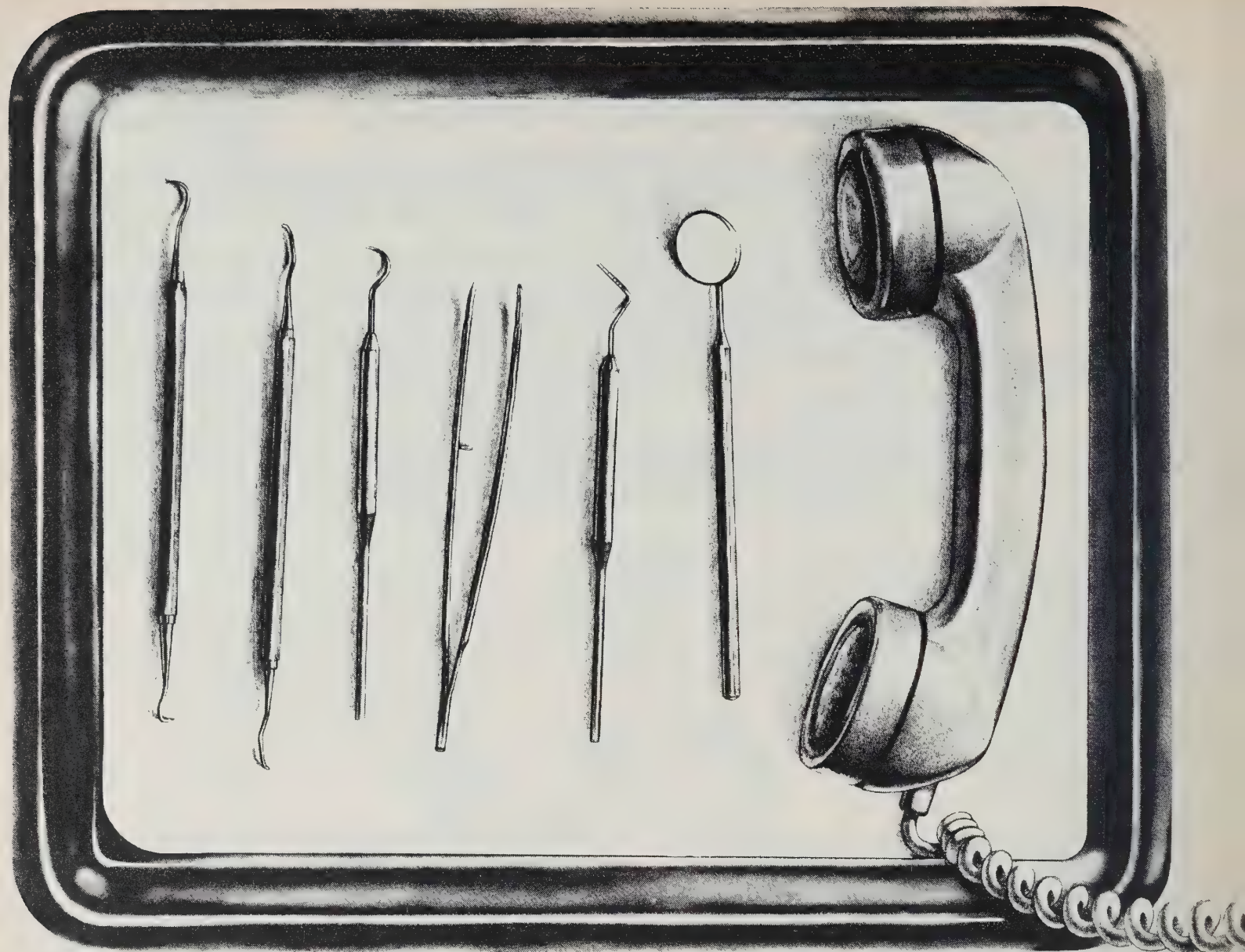
OCTOBER 8-14, 1988

Each year the FDI holds a major world Congress in one of the world's more interesting cities. As well as a top-flight scientific programme, there are social events and travel opportunities, so many participants mix pleasure with business. An FDI Congress is an ideal chance to keep up-to-date with developments within the profession, to meet colleagues from other countries and to see another part of the world, not just as another tourist but as an honoured visitor — an FDI Congress participant.

As an FDI Supporting Member you can get more from your travel while participating more fully in your profession.

For further information on becoming an
FDI Supporting Member
or information on the upcoming
Joint World Dental Congress in Washington, D.C.
please contact the

Canadian Dental Association
1815 Alta Vista Drive
Ottawa, Ontario K1G 3Y6.



Instruments pour le traitement des maladies parodontales

Comme la majorité des adultes canadiens souffrent de désordres parodontaux, l'Académie canadienne de périodontologie vous incite, vous, les praticiens dentaires, à participer à leur dépistage et à leur traitement dès leurs premières manifestations. Elle vous recommande en particulier d'ajouter à vos instruments un autre qui vous sera très utile: le téléphone!

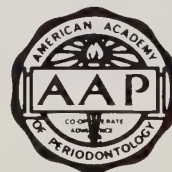
Composez le numéro ci-dessous pour recevoir les publications préparées par l'ACP et l'AAP touchant les soins parodontaux. Ces publications ont été conçues

pour vous aider à diagnostiquer et à traiter les maladies parodontales suivant les critères actuellement admis. Elles vous indiquent en outre comment donner à vos patients des explications à ce sujet.

L'ACP cherche à travailler de concert avec vous de manière à ce que vous puissiez offrir les meilleurs soins possibles à vos patients. Les parodontistes locaux sont prêts à seconder vos efforts pour dépister et traiter les désordres parodontaux dès leurs premières manifestations. Ils sont à votre disposition, alors consultez-les.



*De vos collègues parodontistes,
vos associés en santé buccale*



L'Académie canadienne de périodontologie

5, promenade Fairview Mall, pièce 210, Willowdale, Ontario, M2J 2Z1 (416) 491-6211

Announcements

April/Avril 1988

April 21-22: GERIATRIC SYMPOSIUM

"Times are changing — Are you ready? Clinical Management of the Elderly Patient" Winnipeg, Manitoba. Dentistry \$150, Allied Dental/Health Care Personnel \$75. Contact: The Division of Continuing Education, Faculty of Dentistry, University of Manitoba, 780 Bannatyne Ave., Winnipeg, Manitoba R3E 0W3. Tel: (204) 788-6331.

April 21-25: Third World Biomaterials Congress

held in conjunction with the 14th Annual Society for Biomaterials, 20th International Biomaterials Symposium and the 10th Annual Meeting of the Japanese Society for Biomaterials in Japan. For more information, contact: Professor Yasuhia Sakurai, MD, Institute of Biomedical Engineering, Tokyo Women's Medical College, Kawada-cho 8-1, Shinjuku-ku, Tokyo 162, Japan.

April 25-26: Current Concepts in Periodontology

in Malmo, Sweden. (English) For more information, write to: Lund University, Postgraduate Centre of Dentistry, Carl Gustafs vag 34, S-21421 Malmo, Sweden.

April 28-29: The Institute for Practice Development: How to Build a Quality Dental Practice for the 1990's

in Orlando, Florida. Contact: The Institute for Practice Development, 7762 Silver Bell Dr., Sarasota, FL 34241 U.S.A.

April 28-May 1: 35th Annual Convention of Canadian Association of Oral and Maxillofacial Surgeons

at the King Edward Hotel, Toronto, Ontario. The theme is "Risk Management in the '80s". For information, contact: Dr. Walter Dobrovolsky, 302 - 1849 Yonge St., Toronto, Ont. M4S 1Y2 or phone (416) 486-1551.

April 28-May 1: Alabama Implant Congress XIV

in Birmingham, Alabama. For information, write: Alabama Implant Study Group, P.O. Box 4682, Birmingham, Alabama 35206 USA.

April 29: Alpha Omega/Mount Royal Dental Society

presents a one day

annual scientific limited attendance course; Practical Cosmetic Dentistry given by Dr. Ronald Feinman. For information, contact: Dr. Ronald Grossman, 2175 Hanover Rd, T.M.R., Québec H3R 2X9 or phone (514) 737-9991.

April 29-30: Precision Partial Dentures.

A two day participation course sponsored by the Ontario Academy of General Dentistry at the Four Seasons Hotel in Ottawa, Ontario. \$380 AGD Members. \$395 non-AGD Members. Contact: Dr. John Miner (613) 235-8544.

May/Mai 1988

May 1-4: American Association of Orthodontists

at the New Orleans Convention Center. For registration or more information, contact: Ms. Audrey Schaper, 460 N Lindbergh Blvd., St. Louis, MO 63141 U.S.A. (314) 993-1700.

May 5-7: Second International Symposium on Feeding and Dentofacial Development

will be held at the American Dental Association headquarters in Chicago, Illinois. For more information, contact: Second International Symposium on Feeding and Dentofacial Development, 919 North Michigan Ave., Chicago, IL 60611 U.S.A. Tel: (312) 266-8198.

May 8-11: 121st Annual Spring Meeting of the Ontario Dental Association

at the Sheraton Centre, Toronto. For more information, please contact: Diana Thorneycroft, 234 St. George St., Toronto, Ontario M5R 2P1 or phone (416) 922-3900.

May 8-12: American Academy of Oral Pathology

at the Sheraton Society Hill in Philadelphia, PA. For details, write or call: Dr. Dean K. White, University of Kentucky, College of Dentistry, Lexington, KY 40536 U.S.A. (606) 233-5515.

May 9: University of Toronto, Faculty of Dentistry Class of 1973 15th Year Class Reunion Dinner

(in conjunction with the ODA meeting) at L'Hotel in Toronto.

Please contact: Dr. Wayne Pulver, 159 Willowdale Ave., Willowdale, Ont. M2N 4Y7 (416) 222-9900.

May 10-15: American Academy of Oral Medicine

at Sheraton Hotel at Fisherman's Wharf in San Francisco, California. For information, write or call: Dr. Sheldon Ross, 40 Twisting Lane, Wantagh, NY 11793 U.S.A. (516) 785-4414.

May 11-13: 5th International Dental Congress on Modern Pain Control

in Canberra, Australia. For details, contact: ASA ASD Congress Secretariat, GPO Box 2200, Canberra, ACT 2601, Australia.

May 11-13: American Society for the Advancement of Anesthesia in Dentistry

in Canberra, Australia. For more information, contact: Ms. Nancy Ferraro, 475 White Plains Rd, Eastchester, NY 10708 U.S.A. (914) 961-8136.

May 14-15: Predictably Successful Endodontics

(Warm Gutta-percha Vertical Compaction) with Drs. Henry and Don Yu. Participation course at the Chateau Airport in Calgary, Alberta. For information, contact: Dr. Eugene Dalla Lana, President, Alberta Academy of General Dentistry, 206 - 1305 - 11th Ave SW, Calgary, Alberta T3C 3P6 (403) 244-4867.

May 14-17: American Academy of Pediatric Dentistry

at the Del Coronado Hotel in Coronado, CA. For information: Dr. John A. Bogert, 211 E Chicago Ave., Suite 1036, Chicago, IL 60611 U.S.A. (312) 337-2169.

May 14-17: 24th Annual Convention of the Jamaica Dental Association

in Ocho Rios, Jamaica. For information, write to: Dr. C.D. Barrett-Boyne, Convention Chairman, Jamaica Dental Association, P.O. Box 19, Kingston 5, Jamaica West Indies.

May 15-20: 25th Australian Dental Congress

Sydney, Australia. "An international meeting during Australia's bicentennial". A limited number of brochures are available at the CDA, or contact: 25th Australian Dental Congress, P.O. Box 29, Parkville, Victoria, Australia, 3052.

May 15-20: Academy of Denture Prosthetics at the Bahama Princess Hotel in Freeport, Bahamas. For information, contact: Dr. Charles C. Swoope, 1515 116th Ave. NE, Suite 303, Seattle, WA 98155 U.S.A. (206) 455-5661.

May 20-22: 18th International Meeting on Dental Implants and Transplants in Bologna, Italy. Details from: G.I.S.I., Prof. Giordano Muratori, Via S. Gervasio 1, 40121 Bologna, Italy.

May 20-22: Periodontal Surgery — A Didactic and Laboratory Exercise at the College of Dental Medicine, Medical University of South Carolina. For information, contact: Dr. Gordan Stine, Director, Dental Continuing Education, Medical University of South Carolina, 171 Ashley Ave., Charleston, S.C. 29425-2601.

May 26-28: Fourth Annual National Conference on Youth and Drugs sponsored by PRIDE Canada, Inc. at the Congress Centre in Ottawa, Ontario. For more information, contact: Glenda Klombies, Conference Coordinator, Suite 111, College of Pharmacy, University of Saskatchewan, Saskatoon, Sask S7N 0W0 or phone 1-800-667-3747.

May 27-28: The Human TMJ — A Didactic Exercise with Dr. James River and Dr. Richard Dom at the College of Dental Medicine, Medical University of South Carolina. For information, contact: Dr. Gordan Stine, Director, Dental Continuing Education, Medical University of South Carolina, 171 Ashley Ave., Charleston, S.C. 29425-2601.

May 29-June 2, Les journées dentaires du Québec 1988, Montreal Convention Centre — Palais des congrès. Conjoint Convention with the International Association of Gerodontology. Contact: Dr. Michel Jahjah, (514) 875-8511.

May 30-June 2: Third International Congress of Gerodontology at the Palais des Congrès in Montréal, Québec sponsored by the Order of Dentists of Québec and the International Association of Gerodontology. For information, contact: Dr. Roland Vallée, École de Médecine dentaire, Université Laval, Ste-Foy (Québec) G1K 7P4.

June/Juin 1988

June 1-8: American Dental Hygienists' Association at the Westin Hotel in Seattle, Washington. For more informa-

tion, contact: Ms. Anne Kaczmarek, 444 N Michigan Ave., Suite 3400, Chicago, IL 60611 (312) 440-8900.

June 2-5: 88th Annual Conference of the Canadian Lung Association at Hotel Newfoundland, St. John's, Newfoundland. For information, contact: A. Les McDonald, Director, Health Education and Program Services, Canadian Lung Association, 75 Albert St., Suite 908, Ottawa, Ont. K1P 5E7 or tel. (613) 237-1208.

June 3-4: Operative Dentistry at the College of Dental Medicine, Medical University of South Carolina. For information, contact: Dr. Gordan Stine, Director, Dental Continuing Education, Medical University of South Carolina, 171 Ashley Ave., Charleston, S.C. 29425-2601.

June 3-5: 1988 Canadian Academy of Periodontology Annual Meeting, Pan Pacific Hotel, Vancouver, B.C. Speakers: Dr. Jan Lindhe: Current Concepts of the Etiology and Pathogenesis of Periodontal Disease. Dr. Stan Sapkos: The Role of the Periodontist in Implant Therapy. Contact: Dr. K. McAnulty, #304-126 East 15th St., North Vancouver, B.C. V7L 2P9. (604) 980-5822.

June 6-10: Second Scientific Congress of the University of Ankara Faculty of Dentistry in Ankara Turkey. For details: Prof. Dr. Ali Zaimoglu, A.U. Dis Hekimligi Fakültesi, Besevler, Ankara, Turkey.

June 7-10: Canadian Hospital Association 1988 Annual Conference at the Winnipeg Convention Centre in Winnipeg, Manitoba. For more information, please contact: Education Department, Canadian Hospital Association, Suite 100, 17 York St, Ottawa, Ont K1N 9J6. Tel. (613) 238-8005.

June 8-13: Hong Kong Dental Association/China Medical Association Joint Dental Symposium in Beijing, People's Republic of China. For details, contact: Mrs. Yvonne Ng, Executive Secretary, Hong Kong Dental Association, Duke of Windsor Social Service Building, 8/F, 15 Hennessy Road, Hong Kong. Tel: 5-285327.

June 9-11: Society for Oral Oncology will hold its annual meeting at the Meridien Hotel in Vancouver, British Columbia. Information concerning accommodation, scientific and social programmes can be obtained from the local arrangements chairman: Dr. P. Stevenson-Moore, Cancer Control Agency of BC, 600 West 20th Ave., Vancouver, BC V5Z 4E6.

June 10-12: Alaska Dental Association meeting at the Hotel Halsingland in Haines AL. For more information, contact: Ms. Martha A. Dearborn, 3400 Spenard Rd, Suite 10, Anchorage, AL 99503 U.S.A. (907) 277-4675.

June 13-15: Dental Implants Consensus Development Conference in Bethesda, Maryland sponsored by the National Institute of Dental Research, the Food and Drug Administration and the NIH Office of Medical Applications of Research. To register, contact: Conference Registrar, Prospect Associates, Suite 500, 1801 Rockville Pike, Rockville, Maryland 20852. (301) 468-MEET.

June 15-19: Dental Laboratory Conference at the Denfey Hyannis Hotel in Cape Cod, Maine. For details, please contact: Mr. Robert Gitman, 1918 Pine St., Philadelphia, PA 19103 U.S.A. (215) 546-2313.

June 16-18: 1988 Convention of the College of Dental Surgeons of British Columbia at the Vancouver Trade and Convention Centre. Topics cover Practice Management to Practical Perio. For further information, contact: College of Dental Surgeons of BC, 1125 West 8th Ave., Vancouver, B.C. V6H 3N4 or phone: (604) 736-3621.

June 21-24: 53rd Annual Meeting of the Pacific Coast Society of Prosthodontists in Sun River, Oregon. For more information, contact: Dr. Richard Frank, Prosthodontics SM-52, University of Washington, Seattle, Washington 98195 U.S.A.

June 25-30: Flying Dentists Association at the Sand Destin Hilton in Destin, Florida. For information, contact: Dr. Ted Riegelman, 12 East St., Parkville, MO 64152 U.S.A. (816) 741-0112.

June 25-July 2: Bermuda Dental Association Convention (School is out!) Limited attendance convention. For pre-registration, group travel accommodation and family rates, contact: Dr. Bob Brandon, 85 Lonsdale Dr., London, Ontario N6G 1T4 or phone (519) 657-3368.

June 25-July 4: Yukon Dental Association Summer '88 Continuing Education Program. Two days of clinical presentations to be followed by a week long canoe trip on the Klondike Trail of 1898 down the Yukon River to Dawson City. For details, write: Dr. John Stern, Suite 4, 3089 3rd Ave., Whitehorse, Yukon Y1A 5B3. *Please note: Dates appearing in the January and February issues were incorrect.*

June 26-30: Second World Dental Conference in Jerusalem, Israel. Details from: The Secretariat, Second World Dental Conference, P.O. Box 50006, Tel Aviv 61500, Israel.

June 28-July 1: 94th Annual Meeting of the American Dental Society of Europe in Porto Carras, Greece. Details from: Dr. C.R. Debenham, 1 Harley St., London W1N 1DA, England.

July/Juillet 1988

July 1-3: British Dental Association's Annual Conference, Harrogate International Conference Centre, Harrogate, Yorkshire (UK). "Facing the Future". Contact: Linda Bridges, Conference Office, 64 Wimpole St., London, England. W1M 8AL.

July 1-3: Florida National Dental Congress sponsored by the Florida Dental Association will be held at the Marriott's Orlando World Center, Orlando, FL. For more information, contact: Betty Waggener, Director, Florida National Dental Congress, 3021 Swann Ave., Tampa, FL 33609 U.S.A. Tel: (813) 877-7597.

July 15-20: Academy of General Dentistry at the Hyatt Regency in Chicago, Illinois. For registration information, contact: Ms. Debbie Jepsen, 211E Chicago Ave., Chicago, IL 60611 (312) 440-4300.

July 25-28: 4th International Symposium on Performance Logic and Performance Simulation Training in Dentistry: Balance in Practice at the University of British Columbia, Faculty of Dentistry in Vancouver. Speakers from the United States, Canada, South America and Asia. For information, contact: Dr. Lance Rucker, Coordinator, Performance Simulation Laboratory, The University of British Columbia Telephone (604) 228-4663.

August/Août 1988

August: University of Alberta graduates wishing to have a class reunion during the CDA Convention please contact Sandra Kerluik at the U of A Alumni Office (403) 432-3224 if you require assistance in organizing your reunion mailing. For assistance in function space, please contact Florence Ingham at 432-3066.

August 5-6: International Congress of Laser in Dentistry at the Tokyo Prince Hotel in Japan, sponsored by the Japan Society for Laser Medicine. For further information, contact: Secretariat of I.C.L.D. 1988, c/o International Congress Service, Inc, Kasho Building 2F, 2-14-9 Nihombashi, Chuo-ku, Tokyo 103, Japan.

August 5-7: Singapore International Dental Exhibition and Conference Dentistry's Challenges, AD 2000 and Beyond. For more information, contact: SIDEC 88, Orchard Dental Centre Pte Ltd, 268 Orchard Rd, #05-07, Yen San Building, Singapore 0923.

August 7-11: American Association of Hospital Dentists at the Hershey Hotel in Philadelphia, Pennsylvania. For information, please contact: Dr. Manuel M. Album, 491 N York Rd, Jenkintown, PA 19046 U.S.A. (215) 887-3838.

August 7-11: Ninth Congress of the International Association of Dentistry for the Handicapped, Philadelphia, PA. Contact: Public Relations, (215) 576-2303, Abington Memorial Hospital, Abington, PA. 19001.

August 7-11: American Society for Geriatric Dentistry at the Hershey Hotel in Philadelphia, Pennsylvania. For information, contact: Dr. Manuel M. Album, 491 N York Rd, Jenkintown, PA 19046 U.S.A. (215) 887-3838.

August 8-13: Preventive Dentistry and Epidemiology 1st International Conference sponsored by the Dental Health Center of Karlstad Sweden together with a Course on "Table clinics and demonstrations of preventive materials, programs and methods". For more information, contact: The Preventive Dental Health Center, c/o Hjärnbruken, Box 9055, S-650 09 KARLSTAD, Sweden. Tel: 46 054-13 20 10.

August 12-14: 4th Annual A.C.O.I. Symposium sponsored by the American College of Oral Implantology and the International Congress of Oral Implantologists in Denver, Colorado. For further detail, contact: Margaret M. Jackson, Executive Director, I.C.O.I., 248 Lorraine Ave., 3rd floor, Upper Montclair, N.J. 07043 U.S.A.

August 19-21: 40th Annual Scientific Meeting of the Canadian Association of Orthodontists at the Fantasyland Hotel in Edmonton Alberta. "Future Perspective in Orthodontics". For more information, please contact: Dr. Terry

Carlyle, #1525 Weber Centre, 5555 Calgary Tr. S., Edmonton, Alberta T6H 5P9. (403) 435-3641.

August 21-24: Canadian Dental Association's Annual Convention, at the Edmonton Convention Centre, Edmonton, Alberta. Contact: Linda Teteruck, Canadian Dental Association, 1815 Alta Vista Dr., Ottawa K1G 3Y6. (613) 523-1770.

August 21-25: New Zealand Dental Association's Biennial Conference, Christchurch, New Zealand. Contact: Dr. E.A. Cope, Conference Secretary, 200 Cashel Street, Christchurch 1, New Zealand.

August 23-28: Dental Group Management Association at the Hyatt Regency in Vancouver, BC. For more details, contact: Ms. Joann Junkins, #3 Lakewood Gardens Lane, Madison, WI 53704 U.S.A. (608) 241-2109.

August 28-September 2: XIII World Conference on Health Education in Houston, Texas. For more information, write to United States Host Committee, XIII World Conference on Health Education, P.O. Box 20186, W-902 Stallones Building, Houston, Texas 77225, U.S.A.

September/Septembre 1988

September 7-9: Bristol 88 World Dental Conference University of Bristol, England, U.K. Decisions in Forward-Looking Oral Health Care. For information contact: Mr. B.P. Matthews, Bristol 88 World Dental Conference, University of Bristol, Senate House, Bristol BS8 1TH ENGLAND, U.K.

September 15-18: American Academy of Gnathologic Orthopedics at Caesar's Palace in Las Vegas, Nevada. For more information, contact: Ms. JoAnna Carey, 211E Chicago Ave., Chicago, IL 60611 U.S.A. (312) 642-5834.

September 23-25: American Academy of Esthetic Dentistry at the Hyatt Regency Cambridge in Cambridge, Massachusetts. Contact: Ms. Cheryl Kraus, 211E Chicago Ave., Suite 948, Chicago, IL 60611 U.S.A. (312) 664-2122.

September 23-25: California Dental Association's Fall Scientific Session, San Francisco, California. Contact: Cissie Cooper, Director, Scientific Sessions, CDA, 818 "K" Street Mall, P.O. Box 13749, Sacramento, California, 95853-4749. (916) 443-0505.

September 29–October 1: New Orleans Dental Conference at the New Orleans Hilton, Poydras at the Mississippi River in New Orleans, Louisiana. For more information, contact: Ms. Normalee Ward, 3101 West Napoleon Ave., Suite 119, Metairie, LA 70001 U.S.A. (504) 834-6449.

September 29–October 2: Canadian Academy of Endodontics is holding its annual session at the Fantasyland Hotel, West Edmonton Mall in Alberta. All dentists are welcome. Contact: Dr. Tom Mather, #1107 – 10830 Jasper Ave, Edmonton, Alberta T5J 2B3.

October/Octobre 1988

October 2-5: American Academy of Maxillofacial Prosthetics at Stouffers Harborplace Hotel in Baltimore, Maryland. For more details, contact: Dr. Gregory R. Parr, Medical College of Georgia, School of Dentistry, Augusta, GA 30912 U.S.A. (404) 721-2554.

October 4-7: American College of Prosthodontists at Stouffer's Hotel in Baltimore, Maryland. For more details, contact: Ms. Linda Wallenborn, 1777 NE Loop 410, Suite 904, San Antonio, TX 78217 U.S.A. (512) 829-7236.

October 4-7: American Academy of Dental Radiology at the Sheraton Hotel, Washington, D.C. For details, contact: Dr. William Wege, Medical College of Georgia, Augusta, GA 30912 U.S.A. (404) 828-2935.

October 5-7: 51st Annual Meeting of the American Association of Public Health Dentistry in Washington, DC. For information: Dr. R.G. Rozier, Dept. of Health Policy, CB 8140, Kron Building, University of North Carolina, Chapel Hill, NC 27599-8140, U.S.A.

October 6-8: Academy of Dentistry International at the Sheraton-Washington Hotel in Washington, D.C. For information, contact: Dr. Clifford F. Loader, 7804 Calle Espada, Bakersfield, CA 93309 U.S.A. (805) 832-3236.

October 6-9: American Association of Women Dentists at the Grand Hyatt-Washington Hotel in Washington, D.C. For information, contact: Ms. Cheryl Kraus, 211 E. Chicago Ave., Suite 948, Chicago, IL 60611 U.S.A. (312) 337-1563.

October 8-14: ADA/FDI Joint 1988 World Dental Congress Dentistry: Caring for the World at Washington, D.C. For more information, contact: Congress Secretariat, ADA/FDI Joint 1988 World Dental Congress, c/o American Dental Association, 211 East Chicago Ave., Chicago, Illinois 60611 USA or FDI Headquarters, Fédération dentaire internationale, 64 Wimpole St., London W1M 8AL, United Kingdom.

October 9-14: International Workshop on Cranio-facial Trauma sponsored by the Australian Cranio-Maxillo-Facial Foundation. For information, contact: Mrs. D. Moody, Executive Officer, 226 Melbourne St., North Adelaide, S.A. 5006, Australia.

October 10-15: American Academy of Implant Dentistry at the J.W. Merriot Hotel in Washington, D.C. For registration information, contact: Mr. John P. Winiewicz, P.O. Box 2002, Abington, MA 02351 U.S.A. (617) 878-7990.

October 12-16: American Society of Dentistry for Children at the Sheraton Bal Harbour, Bal Harbour, Florida. For information: Ms. Lana Wos, 211 E Chicago Ave, Suite 920, Chicago, IL 60611 U.S.A. (312) 943-1244.

October 25-27: Medical/Hospitech 88 – 2nd International Medical, Hospital and Dental Equipment and Facilities Exhibition in Bangkok, Thailand. For more information, contact: SHK International Services Ltd., 22/F., 151 Gloucester Rd., Hong Kong. Telephone: 5-8326100.

October 26-29: American Academy of Periodontology at the Sheraton Harbor Island Hotel in San Diego, California. Contact: Ms. Jean Pierson, 211 E Chicago Ave, Suite 924, Chicago, IL 60611 U.S.A. (312) 787-5518.

October 26-29: 42nd Annual Meeting of American Academy for Cerebral Palsy and Developmental Medicine Deadline for free papers: February 12, 1988. Royal York Hotel, Toronto. INFO: AACPD, P.O. Box 11086, Richmond, Virginia 23230 USA.

October 27-31: 23rd Indian Orthodontic Conference followed by Post Conference Workshop at the Manali Hill Resort. For details and registration forms, contact: Dr. Pradip Jayna, Organising Secretary, 23rd I.O.C., M-75, Connaught Place, New Delhi – 110001, India. Phone: 332-9516 or 9517.

October 28–November 1: American Institute of Oral Biology in Palm Springs, California. For details: Dr. Philip J. Boyne, Dept. of Surgery, Loma Linda University Medical Center, Loma Linda, CA 92350 U.S.A. (714) 824-4671.

November/Novembre 1988

Novembre 21-25: Festival international du Film et de la Vidéo dentaires–XIèmes Journées dans le cadre du Congrès International de l'Association Dentaire Française. Renseignements: Dr. M. Dolovici, Secrétaire générale du Festival international du Film et de la Vidéo dentaires, 92 avenue de Wagram, 75017 PARIS.

N E W S R E L E A S E

World Health Organization Fellowships

OTTAWA — Details of the annual World Health Organization (WHO) competition for fellowships for Canadian citizens wishing to undertake short-term studies abroad have been announced today by the Department of National Health and Welfare.

All health personnel including dentists and dental auxiliaries are eligible to apply. Those engaged in pure research, undergraduate and graduate university students are not.

Applicants for WHO fellowships will be rated by a Canadian Selection Committee on the basis of education, experience, proposed area of study, field of activity and the intended use of their newly acquired knowledge.

The final decision regarding the award of a fellowship, as well as the proposed area of study, rests with WHO.

Applications must be received before **June 30, 1988**. Further information and application forms can be obtained by writing to: **WHO Fellowships**

Intergovernmental and International Affairs Branch

Department of National Health and Welfare

Jeanne Mance Building, Tunney's Pasture, OTTAWA, Ontario K1A 0K9



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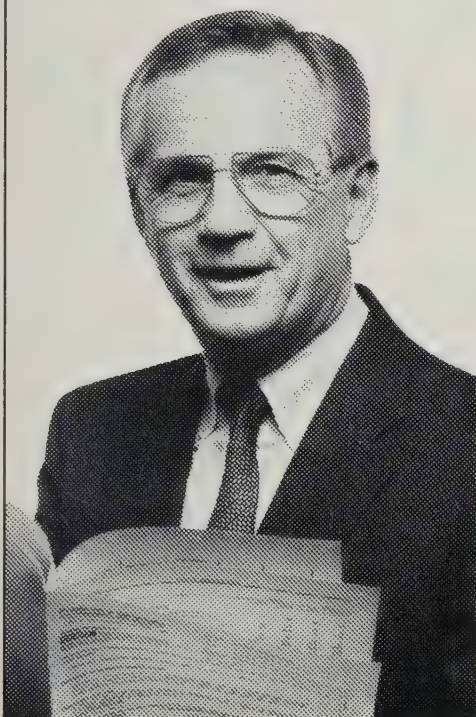
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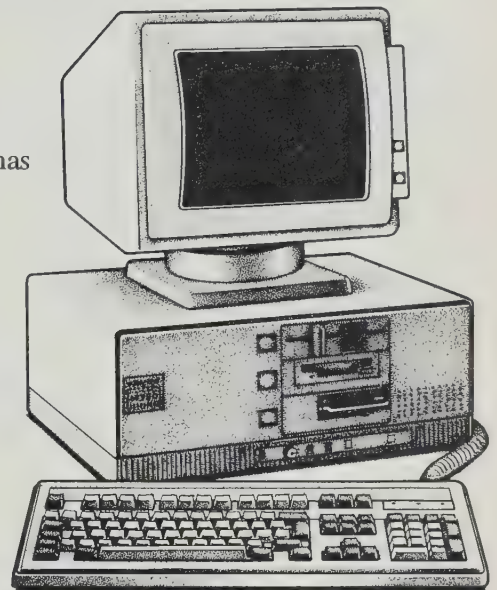
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April is Dental Health Month and the big question is :
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**What
Keeps
Bob
Smiling?**

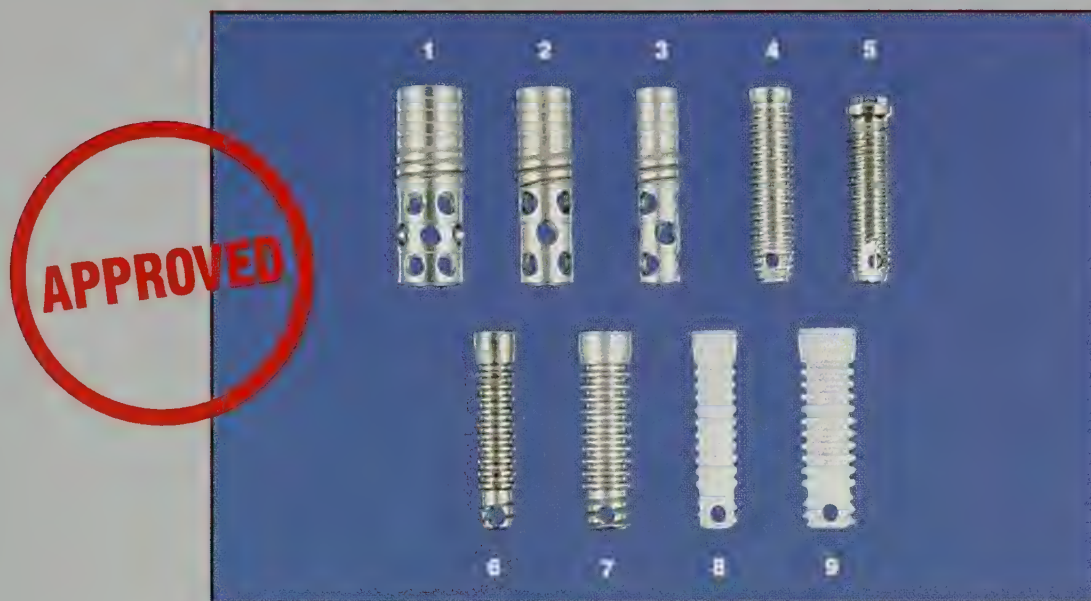


**À quoi
tient le
sourire de
Bastien?**



CANADIAN DENTAL ASSOCIATION
L'ASSOCIATION DENTAIRE CANADIENNE

CORE-VENT IMPLANT SYSTEMS APPROVED BY CANADIAN HEALTH & WELFARE



The Health Protection Branch of Health and Welfare Canada has approved the Core-Vent System of Osseointegrated Implants. Notices of Compliance have been issued for the Core-Vent® [#1-#3], Screw-Vent® [#4], Micro-Vent® [#6,#7] and HA-Coated Micro-Vent® [#8,#9] implant systems (Compliance #9680-C1211, 9405-1-42). This action by the Canadian Government acknowledges the safety and efficacy of The Core-Vent System. A notice of compliance was also issued for the Swede-Vent™ Implant [#5] which is substantially equivalent to the Nobelpharma Fixture in material and design.

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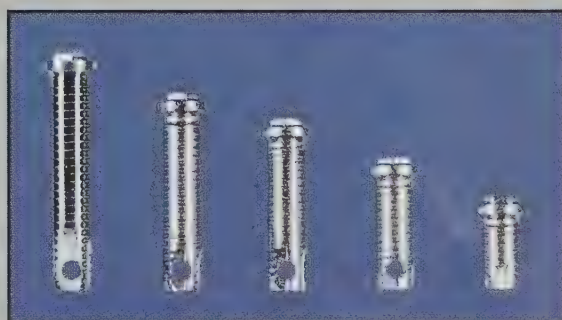
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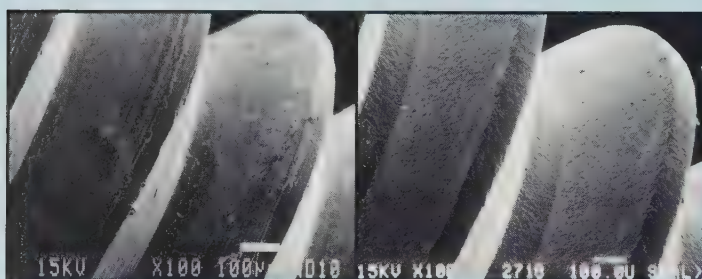
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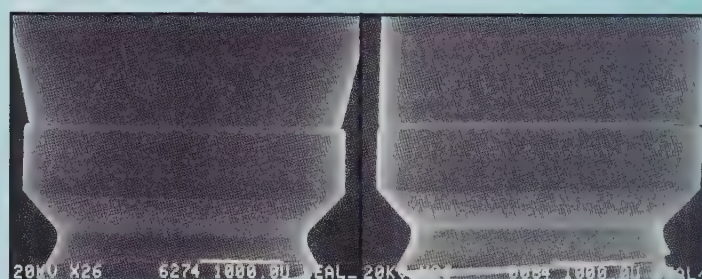
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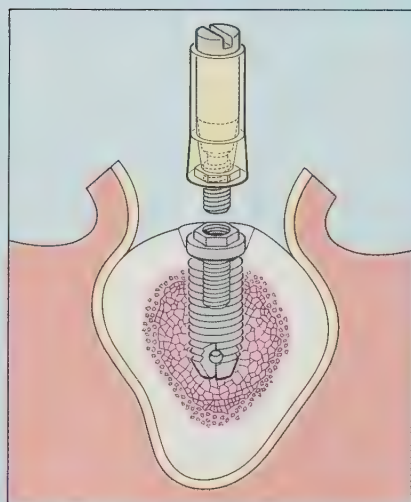
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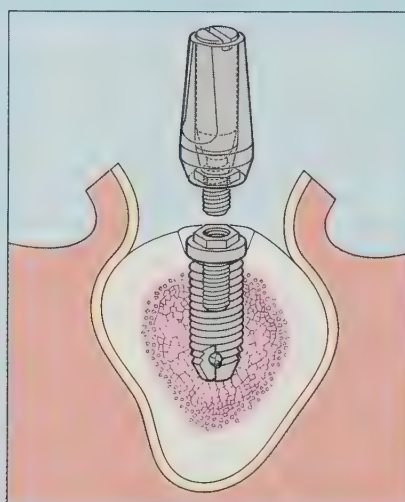
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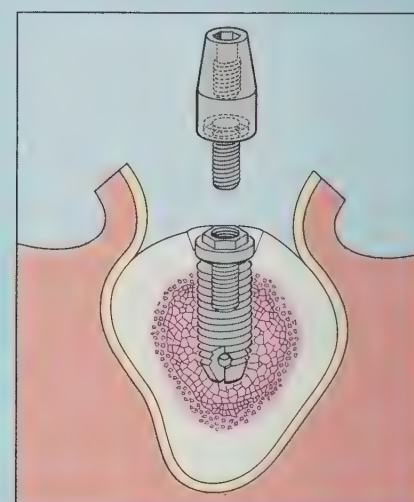
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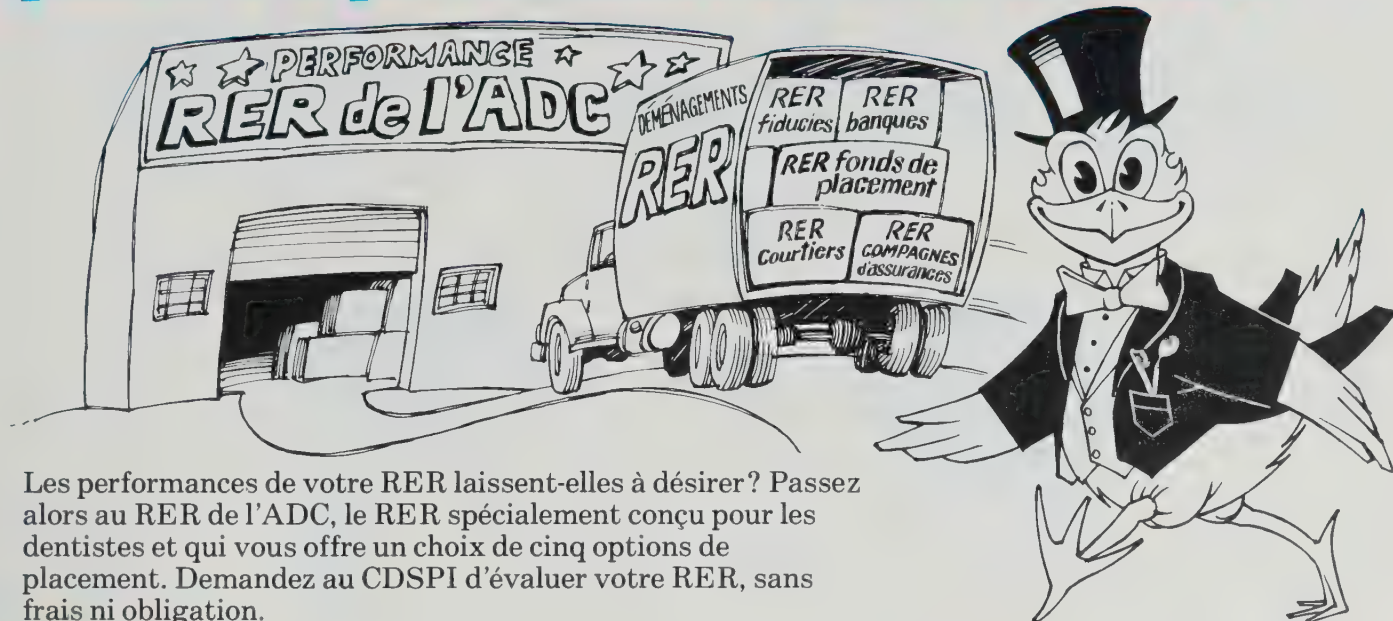
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Edmonton, Alberta
September 22nd, 23rd, 24th, 1988

The theme for this meeting will be "Comprehensive Treatment Planning and Therapy" and will include nationally and internationally recognized speakers in periodontics, endodontics, oral surgery, orthodontics and restorative dentistry including the use of an osseointegrated implant system.

A varied social program is planned to celebrate twenty-five years of the Academy's commitment to dental excellence.

Enquiries should be directed to:

Dr. E.W. McIntyre, #68 Meadowlark Park S.C., Edmonton, Alberta,
T5R 5W9

OR TO

Dr. A.H. Sneazwell, Seminar Chairman, #203, 7125 - 109 Street,
Edmonton, Alberta, T6G 1B9

Canada Health Day



On May 12th, 1988 health care facilities and agencies across Canada will sponsor a variety of health promotion, education and community activities to celebrate Canada Health Day.

To obtain a Canada Health Day planning guide or for information contact:

Canadian Hospital Association
17 York Street, Suite 100
Ottawa, Ontario
K1N 9J6

Garantisseriez-vous une augmentation



Nous aimons tous penser que nos revenus iront en augmentant avec les années. En général, c'est effectivement ce qui se passe tant que vous travaillez. Si vous étiez toutefois incapable de travailler pendant longtemps, la situation risquerait d'être différente.

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Si vous n'avez pas encore demandé cette option, étudiez un instant votre assurance invalidité prolongée. Si vous étiez atteint d'une invalidité demain et que vous restiez dans l'impossibilité de travailler pendant plusieurs années, votre revenu serait bloqué à ce niveau, peut-être même jusqu'à l'âge de 65 ans. Même si ce revenu peut être suffisant pour répondre à vos besoins actuels, l'inflation (même modérée) diminuera le pouvoir d'achat de vos dollars de 1988. Avec l'indexation sur le coût de la vie, vos prestations seront relevées d'un montant correspondant à 10 % du montant de garantie de base chaque année.

Ne bloquez pas votre revenu futur : protégez-le avec l'option d'indexation de l'assurance invalidité prolongée.



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Régimes parrainés par vos associations dentaires nationale et provinciales et administrés par le CDSPI, 2, square Lansing, Bureau 600, Willowdale, Ontario M2J 4Z3

Le texte ci-dessus a été approuvé par nos consultants/courtiers et nos assureurs.

Offices and Practices

BRITISH COLUMBIA: Solo family practice with good recall system and excellent staff. The Sunshine coast is a growing area and this town has steady employment and high percentage of insurance. I will be your associate for an introductory period. (604) 485-2851.

BRITISH COLUMBIA—Fraser Valley: Well-established, larger, modern family practice. Presently busy for associate and principle. Owner reluctant to leave but must accommodate family needs. Reply to CDA Box 2406.

BRITISH COLUMBIA—Sooke (near Victoria): General family practice established 12 yrs. Providing all facets of dentistry. Well located in growing community. Large patient base will assure continued good income and steady growth from active recalls and new patients. Terms negotiable. Dr. John Bidgood. Business (604) 652-2521 or (604) 652-3535 or Home (604) 652-4114.

BRITISH COLUMBIA—Vancouver: Long-established, solo, downtown, quality general practice. Two fully-equipped operatories. Office newly decorated throughout. Prestige location, excellent transit system and parking. Very low overhead. Excellent and responsive recall. Owner plans to retire. Phone evenings (604) 261-5775.

BRITISH COLUMBIA—Vancouver: Established growing pediatric practice for sale with active recall system in non-fluoridated area. Opportunity for hospital dentistry. Respond to: Dental Office Manager, 243-1755 Robson Street, Vancouver, B.C. V6G 1C9.

BRITISH COLUMBIA—Victoria: Rewarding practice opportunity or associateship available with our progressive, growing, total care, quality practice. Prime location. Computerized office. Super caring staff and excellent patient flow. For more information, please call (604) 381-6433 or (604) 595-8050 evenings.

BRITISH COLUMBIA—West Vancouver: Well-established practice including $\frac{1}{4}$ share ownership of prestigious dental building in prime waterfront location. Two operatories with space for a third,

plus mutually shared waiting room, computerized front office, hygienists' operatories, x-ray and laboratory areas. Retiring. Phone (604) 922-7747 or 922-1314.

BRITISH COLUMBIA—West Vancouver: General practice of 15 years in highly desirable area. Four fully-equipped operatories in a bright, attractive office. Inquiries (604) 669-4323.

ALBERTA: For sale. Established 5-year-old practice. Good lease, modern equipment. Available immediately. Owner relocating. Or stay for smooth transition for six months part-time. Over 4 large drawers — Mardan — of active patients. Hygienist available if desired. Suitable for 2 new graduates or 1 experienced dentist. Call (403) 553-4782 evenings.

ALBERTA—Calgary: Well-established, edgewise orthodontic practice for sale. Owner will stay for smooth transition. Reply to CDA Box 2402.

ALBERTA—Fairview: Practice for sale. Owner has retired from active practice to assume administrative position. Good patient flow, some equipment and supplies, and all charts included. Excellent location. Will be sold for fair appraisal of existing assets — no goodwill or percentage of gross involved. Call (403) 429-1478 evenings and weekends.

ALBERTA—Provost: Family Practice For Sale. Low overhead, established for two years. One operatory, room for two. All new equipment. Good hunting and sports within the community. Owner relocating. Available immediately. Phone Dr. Alex Lo at (403) 288-6696.

SASKATCHEWAN: PRACTICE FOR SALE. Busy 6-year-old satellite dental practice in east-central Saskatchewan. Two fully-equipped operatories including x-ray units. Can be used as a satellite or full-time dental practice. Ready for immediate possession. Reply to CDA Box 2404.

SASKATCHEWAN—Kindersley: Dental Practice for Sale. Six fully-equipped operatories, four x-ray units, panelipse, computer, central suction, 3 cavi jets. 2300 sq. ft, air-conditioned, private office, staff room. Very large, family practice. Long-term lease. Dentist wishes to retire. Call Dr. H.S. McCarter at (306) 463-2600 (office) or 463-4403 (residence).

NORTHERN SASKATCHEWAN: For sale. Long-established practice. Excellent location. 1200 sq. feet corner office. Three fully-equipped operatories; two with Pelton Crane and Cox units. Satellite practice also available. Terms reasonable. Phone (306) 763-3676 evenings.

SOUTHERN SASKATCHEWAN: Busy 6 year-old practice for sale. 4 fully-equipped operatories. Excellent recall and hygiene programs. Office known for its efficient and friendly delivery of care. Reasonable price. Call (306) 634-7261 (B) or (306) 634-7827 (H).

MANITOBA—Winnipeg: Fully-equipped, dental office for rent in excellent populated area on Marion Street in Winnipeg, Manitoba. This has been a dental location for over 30 years. NO CAPITAL INVESTMENT REQUIRED. Interested parties contact Dr. Louis Cogan (204) 253-2602 (office) (204) 885-1290 (residence).

MANITOBA—Winnipeg: Well-established, general practice in downtown professional building. Owner retiring and will assist in transition. Phone (204) 261-3586 (evenings/weekends).

SOUTHERN ONTARIO: Endo and Periodontist — Georgetown 40 minutes from Toronto wanted to share existing new office space with Oral Surgeons. Please contact Dr. S.J. Levitz, 77 Queensway West, Unit 212, Mississauga L5B 1B7.

SOUTHWEST ONTARIO: Busy, established, family practice for sale in small town. Modern 30' x 50' building, air-conditioned, two well-equipped operatories. Reception and business areas, lab, kitchen, bathroom, private office and staff room (or third operatory). Excellent income, low overhead. Please call (519) 482-5664.

NORTHERN ONTARIO: Well-established family practice for sale in small town. 1,000 sq. ft. office in new medical centre includes 2 fully-equipped operatories, plumbed third room, lab, private office, pan eclipse, nitrous oxide. Excellent staff available. Please reply to CDA Box 2388.

ONTARIO—Sudbury District: Seven-year-old family practice for sale. One operatory, low overhead, high gross. Good as satellite. Incentive grant available. Phone (705) 437-3821.

NEW BRUNSWICK—Saint John: General practice for sale. Owner retiring. Some basic equipment available. Over 1200 active patients (mostly adults) approximately 50 percent have dental insurance. Phone evenings (506) 672-9588.

NOVA SCOTIA: Exceptional opportunity. Very busy, modern family practice for sale on beautiful South Shore of Nova Scotia. Excellent income. Write 6452 Vienna St., Halifax, N.S. B3L 1S8 or phone (902) 455-3748 or 454-9027.

NOVA SCOTIA—Halifax: Established downtown general practice for sale, located in Purdy's Wharf. Sale includes share of modern equipment, sundries, and term lease of office space. Practice includes a large recall clientele (mostly adult). Suitable for an experienced operator or two graduates. Apply to Box CDA 2327 or in confidence to Dr. Stewart Keddy, 43 Westridge Dr., Halifax B3M 3K3.

NOVA SCOTIA—Lunenburg: Practice for sale in modern medical-dental centre. Includes two fully-equipped operatories and cost-shared facilities such as spacious reception, hygiene, lab, panoramic x-ray facilities. Ideally located next to hospital and close to schools, shopping area and recreation facilities including swimming, golfing, boating, tennis, etc. Just one hour from Halifax. Please reply to: Robert Murray, DDS, P.O. Box 370, Lunenburg, N.S. B0J 2C0 or phone (902) 634-8880 (O) or 624-9966 (H).

NOVA SCOTIA—Shelburne County: FOR SALE: Fast growing practice in a rural, coastal setting. Two operatories available within a multi-disciplined, relaxed family practice. This is an excellent opportunity for the right individual. For more information, please contact Dr. Kim Mailman at (902) 875-2236 after 6:00 p.m. or in writing to Box 1000, Shelburne, Nova Scotia BOT 1W0.

Associateships Available

YUKON TERRITORY: Associate required for busy general practice to help handle new growth. All enquiries in writing please to: Dr. R.E. Pearson, Klondyke Dental Clinic, #4 3089 - 3rd Ave., Whitehorse, Yukon Y1A 5B3.

BRITISH COLUMBIA: Fully-employed community in northern B.C. requires associate with view to partnership to

assume patients of previous dentist. For additional information please call (604) 921-7182.

BRITISH COLUMBIA—Fraser Valley: Associate dentist required as soon as possible for newer, established, family practice in one of the fastest growing cities in B.C. (Abbotsford) Excellent new patient flow - 40 plus per month. 5 chair, 1500 sq. ft. office. 50 minutes from Vancouver. Phone (604) 853-5677 and ask for Shannon.

ALBERTA: Associateship available for general practice in Calgary starting in May 1988. Please contact Dr. Stephen Lee at (403) 280-3232.

ALBERTA: Associate required for busy, rural practice with possibility of future purchase. Associate could begin May '88. Modern, well-equipped practice in a town of 5,000 people located 200 km northeast of Edmonton. Please reply to CDA Box 2401.

ALBERTA—Edmonton: ASSOCIATE WANTED - In well-established extended-hour practice, with opportunity for purchase in future. Excellent opportunity for an ambitious quality-oriented practitioner. Reply to CDA Box 2369.

ALBERTA—Medicine Hat: Associateship (buy-in option) available for June. Excellent opportunity for new grad or relocating practitioner. Extended-hour clinic, newly furnished and decorated, fully-equipped (panorex and fibre optics) family practice. Beautiful town of 43,000 with large drawing area from southern Saskatchewan and Alberta. Dentist will be busy immediately. Please reply to CDA Box 2405.

ONTARIO: ASSOCIATE wanted for Oral and Maxillofacial surgery practice in Ottawa. Candidate should be certified as specialist in Ontario or should be eligible for specialty certification. Send Résumé to Box 2360.

ONTARIO—Niagara Region: Associate required for a modern two-operatory family practice located in a well-established medical building. Partnership/purchase opportunity available. Call (416) 871-2903.

ONTARIO—Ottawa: Bilingual, left-handed associate needed for well-established general practice. Full- or part-time. Position may lead to partnership or ownership. Reply to H. Patenaude (613) 234-1052 (bus) or (613) 237-5037 (res.)

ONTARIO—Windsor: Associate wanted for busy practice leading to early partnership. Call (519) 258-6505 (office) or (519) 972-3310 (home).

QUÉBEC—Brossard (15 minutes from downtown Montreal): Bilingual associate for a ten year old practice located in a major commercial centre. Suburb is rapidly expanding and has a young cosmopolitan population of professional and entrepreneurial class. Telephone (514) 465-9100.

QUEBEC—Montreal: Oral and Maxillofacial Surgery Associateship available with a view to partnership in an established (20 years), quality care, solo practice. Must be bilingual with eligibility for specialty licensure and a 'people person'. Send C.V. and a photograph to CDA Box 2407.

NORTHERN NOVA SCOTIA: Associate required. Excellent opportunity for right person in a progressive, health-centred dental practice located in scenic rural Nova Scotia. We have a large recall practice, team-oriented with emphasis on all phases of dentistry. There are four fully-equipped, state-of-the-art operatories with room for expansion. Buy-in potential for the appropriate candidate. Apply to CDA Box 2399.

Opportunities Available

BRITISH COLUMBIA: Dental practice for sale or open to associate. This is a very healthy practice with a strong orthodontic component. We are in a modern building with four dentists and a laboratory rated as one of BC's best. The owner wishes to go back to school but will stay on to assure smooth transition or to finish orthodontics, if necessary. Situated in Williams Lake, BC (pop 18,000), the practice has a tremendous capacity for all aspects of family dentistry. The city has a diverse economy based on lumber, copper, ranching and tourism. It is also rapidly becoming a government centre and is only 50 minutes by air to Vancouver. Please phone collect (604) 398-8422 (Office) or 392-4026 (Home).

BRITISH COLUMBIA—Prince George: We are inviting enthusiastic, quality-conscious dentists (experienced dentists preferred, new graduate considered) to consider a unique opportunity in a non-traditional environment. We are a large progressive dental group located in Prince

George, B.C.'s 2nd largest city. Our salary and benefit package, along with flexible work schedule, is designed to attract local and out of province candidates. We welcome your telephone (collect) inquiries to: Lakewood Dental Group, c/o Elaine David. Mon-Fri (daytime) (604) 562-5551. Evenings or weekends (604) 562-1927.

BRITISH COLUMBIA—Nanaimo, Vancouver Island: Associate-Partner. Excellent opportunity in busy and growing practice in a mall setting. High standard of living with wonderful climate and recreational facilities. Close to Vancouver and Victoria. Reply to Dr. Patricia Crosson. Phone (604) 754-1949 days and (604) 468-9892 evenings.

BRITISH COLUMBIA—Surrey: Dental office is looking for a hygienist to join our team. Our staff is dedicated to high quality dentistry in a happy and caring environment. We have a terrific hygiene assistant to work with you on your four day work week. Phone days (604) 584-7710 or after 6 p.m. (604) 538-2997.

ONTARIO: SPECIALISTS. A Thornhill group practice requires dental specialists to provide in-house patient care. For further information, please contact: Dr. Larry Lerner (416) 881-5225.

NOVA SCOTIA—Halifax—Dartmouth Area: Periodontist needed for high volume outstanding income producing multi-specialty clinic setting. Exceptional opportunity call immediately. (902) 425-5056 or (902) 425-3215.

Opportunities Wanted

ALBERTA: Considered selling your practice? I wish to purchase a good quality, high grossing practice in Edmonton or Calgary. A meaningful participation in office transition is necessary. Option to remain full or part-time. Call (403) 467-2900 (office) or 464-6397 (home).

Equipment

MANITOBA: For sale Moritz panex x-ray unit. 3 years old. Reply to Dr. Rudisaile, Box 21, Grp 336, R.R. #3, Selkirk, Manitoba R1A 2A8 or phone (204) 757-2512.

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Back Talk

by Jean Cives

The Value of Conventioneering

Returning from a Convention, I was musing on the statement made by a learned professor that unless his particular subject received the attention it was due, then Dentistry would lose the *only* Science it could possibly operate on. I was amazed! Where does he do his job? It had to be in the University Clock Tower — with all the real ding-dongs. But no, he is a nice, if misguided, chap. How could I dismiss all the science in a variety of clinical subjects so airily, and eerily?

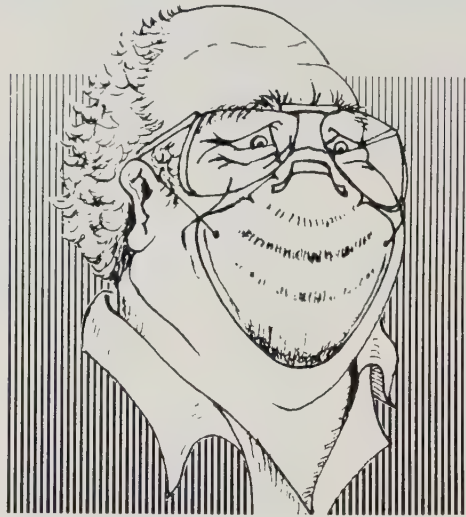
Being a clinician at heart, and having no pretense at being a scientist, I was in a difficult position. To speak out was to be the drunk at a Temperance Meeting. Merely to protect was to admit guilt — the only acceptable response due in church is repentance, not argument.

But actions speak louder than words. The airline that I was on only serves domestic wine. For years now I have told patients facing immediate dentures or several extractions that the only way to feel good after such an event is to sip a nice European wine, preferably a Mosel or Muscadet, just cooled, not frozen. This, I found, after years of scientific experimentation, cuts the gluck in the mouth, and also gives a feeling of well being! Before you write in protest, understand clearly we are writing medical-dental matters here, not inviting the innocent to drink, dance or frighten horses on the streets.

Here I was at 37,000 feet, literally, having these thoughts. How to show him that I am a serious scientific clinician. It struck me! I felt like Isaac Newton on whose head apples fell. The post-extraction wine has been my sole contribution to the relentless march of dental science, but I had no data, no controls, no "whatever" is the current buzzword in Science.

You learn by Scientific Experiment, he told us. Excluded by implication was the time I nearly cut an idiot's tongue in half when I was convinced of the virtues of slice preparations. What about the time I muddled up (never admitted this before — told everyone it was my assistant) the lower casts of two edentulous patients and found the FTF factor at 10/10 (Failure To Fit Factor, not unknown in denture work).

The dentist who first called my atten-



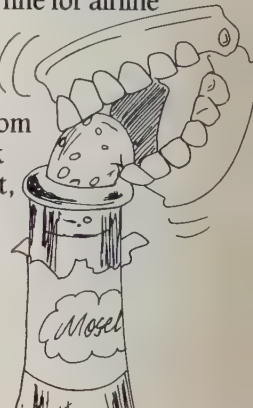
tion to the FTF factor, a famous denture condition, asked me never to reveal his identity — and I will not. He tells of joining a group practice when the imprint of the mortar board was fresh upon his brow, and being asked what he liked doing, he allowed he was interested in Oral Surgery, so his kindly older colleague told him that two citizens were about to become denture wearers and would he go to the hospital on Thursday morning, denude them of teeth and pop in their immediate denture. This he did. However, when fitting the upper dentures, he was most impressed at a) the blood, b) the lack of fit c) the ghastly appearance of both citizens. This made him think first what sort of practice he had joined and second what sort of life had he commenced. Instead of beauties he was producing beasts. First check appointment for both was Friday afternoon. Starting with patient #1, he viewed denture #1, greatly mutilated by his attempts to make it fit. But a sneaky thought occurred to him. Patient #2 arrived. He ascertained that patient #2 was a bit appalled at his appearance — even his guard dog had fled whimpering when he got home; his wife being of sterner stuff regarded his new denture face as different, and even funny — a sort of masculine practical joke to amuse wives. The young dentist told #2 he would fix all this for him, took away denture #2, returned to the lab, had a cup of coffee, returned with denture #1 (patient #1 was informed his denture was being "rebased"), fitted denture #1 into patient #2 — total success. Denture #2 into patient #1, another successful inser-

tion using the rapidest rebase system yet developed. Was that a Scientific Experiment from which we learn? Whatever it was, my informant told me that the word spread very rapidly in town that he was the smartest young dentist to hit town for decades — could *he* make those dentures fit! Took him only 10 minutes to fix up the older dentists' terrible dentures. What they learned at Dental School these days! I digress as usual, but there is an important lesson here — practical experience and science and technology can be different!

What I am building to, astonished readers, is a statement, an expose, as you will, which will rival the insight and achievement of an unknown German dentist. It was one of us who solved the problem of laying a Trans-Atlantic cable. Yes, a German dentist modified a sausage making machine and this put a continuous waterproof covering on the wire used for the first such cable (Editors and other ink-stained wretches who review this during the gestation period — please note I did not make that up, but I cannot remember where I read it).

The Cives Test is now announced. To classify wines, white wines in particular, and in particular for use as in the rinse-and-swallow technique after extractions (see Cives 1984), follow this simple procedure. Decant 2-3 ml of your favourite whites into wineglasses — equal amounts, and one glass (for the sake of domestic recovery) of the local variety. Drop simultaneously into each glass (as fast as you can) a Rolaid or Tums tablet. Press your \$17.50 digital watch knobs for timer, and watch closely the dissolution of the Test Tablets. The one with the tablet that lasts the longest is the wine best for normals like you and me, the fastest dissolution is just fine for airline passengers.

A final caution or two. Do not believe all you hear at conventions or from experts, and do not drink the above samples except, of course, in airlines, that only serve domestic wine. It will bring you to an altitude of 5 feet without flaps down! Δ



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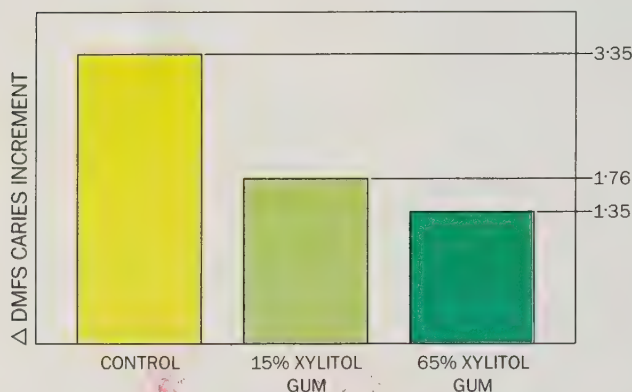
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²The Finnish Xylitol Study, 1982-1985. The French Polynesian WHO Study, 1979. The WHO Hungarian Study, 1981-1984. The Montreal Chewing Gum Study, 1987. Case studies available upon request.

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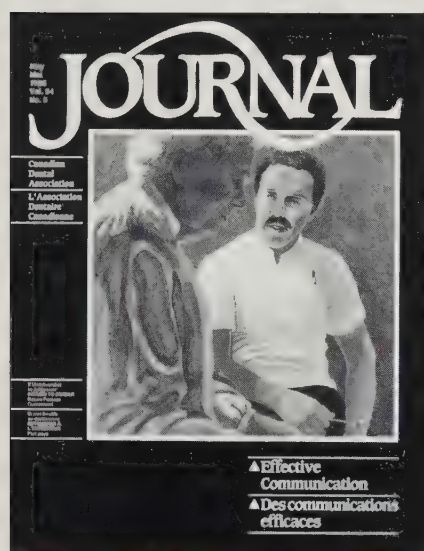
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Confrères in Peril

News has come to us from across the Pacific that our dental confrères in New Zealand are facing forced changes in their Dental Act that will create devastating ramifications in the practice of dentistry as recognized by self-regulated professionals.

The proposals in New Zealand, scheduled to come into effect on July 1, next, would create concern in any dental act such as, removal of supervision on auxiliaries, denturism, corporate (non-dental) ownership of practices and removal of restrictions on advertising. It is, however, something more insidious than any of the foregoing that causes alarm in dental circles — the complete deregulation of dentistry itself. Deregulation is not a foreign word to Canadians, as we witness our government's attempts to deregulate the transportation industry: but deregulating the practice of dentistry!!

Explanatory notes to the New Zealand Bill which contains a clause that is beyond our comprehension:

"all restrictions on the practice of dentistry by non-dentists have been removed. The only restraints are in Clause 31 which prevents persons who are not dentists from claiming to be dentists or to have expertise in dentistry."

Essentially what this Clause states is that anyone can practice dentistry so long as they do not call themselves dentists!

It is not the intention of Canadian dentistry to meddle in the internal affairs of another jurisdiction, but when we observe the end results of what politicians determine as free market philosophies, i.e. delicensing and freedom of choice, we cannot help but be alarmed and question the political wisdom of our law making neighbors. It is our understanding that the legislators were reacting to the old, and inherently false perception that dentists were running a closed shop, that competition is limited and that monopolies exist.

Canadian dentistry stands proud! In 1868 we became the first nation in the world to have a Dental Act within a single document. The purpose of that original Act and every succeeding Dental Act in our nation, is not necessarily the self-aggrandisement or emulation of a certain segment of the healing arts, but the protection of the public. The self-regulating, self-governing privileges bestowed by our legislators over the past 120 years, are based upon trust.

Trust is not the possession of one segment or faction alone. Like a pyramid, it is three-faceted: the legislators trusting learned men to practice their profession in an ethical fashion; professionals trusting through their peer review system that licensing, education and standards, are to be upheld; and trust from the public that their best interests are constantly respected. Only one of the trusts of this pyramid need falter and an imbalance is created, and the potential for chaos arises.

The legislators in New Zealand have violated their trust by making an arbitrary decision, obviously by-passing consultation with the profession. The result will not be protection of the public, but deception and mistrust. How is the citizen in New Zealand going to make a value judgement on dental treatment when the only restraint for unqualified practitioners is that they don't use the title of "dentist" or make false claims of expertise?

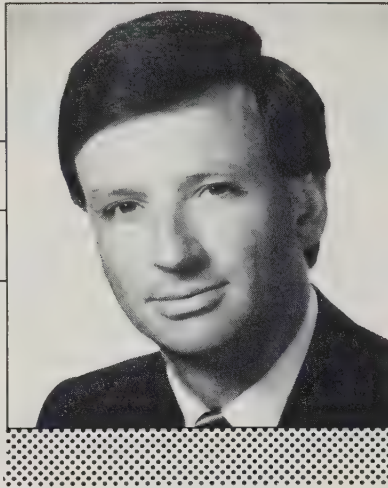
As a call of support for our confrères abroad goes out, let us not be complacent and say "it can't happen here". (Remember, when the term "New Zealand Dental Nurse" arrived on our shores?) Lines of communication — the mortar that holds the mosaic of the trust pyramid together — must be kept open. Legislators must be willing to consult and listen to the profession; the profession must constantly guard the principle that their self-regulation is directed to the protection of the public; and the public itself must be trusted to seek the best care possible from qualified practitioners for a lifestyle of preventive dentistry.

Any betrayal of this triad of trust inevitably leads not only to Confrères in Peril — but peril to dentistry itself. △

P. Ralph Crawford, DMD
Editor, JCDA

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President's Column



The National Health Scene

The Canadian Dental Association National Conference on Infection Control was held in Toronto, February 28-29, 1988. Following on the heels of the Conference on Strategic Planning, it served as another indicator that CDA has a responsibility to develop policies and positions on national health issues which go beyond oral health. The Conference was successful both as an educational experience and as a hands-on workshop. It was also a reminder that we have a lot of work to do in effectively communicating the messages we want the local and national media to hear and understand.

First, as an educational experience it was a unique exercise. The public and professional response to the issue of Infection Control with the particular focus on AIDS has become emotional and at times irrational. Our Conference presented not only a clear and simple analysis of the state of the art in Infection Control procedures, but also provided the views of legal and ethical experts. The second day of the Conference gathered invited participants from all the provinces, a sprinkling of senior staff, experts on Infection Control and the continued valuable input of our invited legal and ethical experts. The objectives were twofold: to update and modify, where necessary, our current national Infection Control Guidelines, and to debate related legal and ethical questions.

I believe that the scientific objectives were accomplished; the members of the profession will be the direct beneficiaries. As well, more supporting documentation will be developed in the coming months. The legal and ethical issues are more complex, and it is here that we face the inevitable problems that arise in attempting to define the roles and responsibilities of the dental profession in the broad national health context. It is my hope that in the near future our legal and ethical responsibilities will become more precisely defined. Some colleagues would prefer that our professional focus be solely on dental issues; this would be the safe and easy approach. But if we are to maintain our position as credible health professionals, we must have the status that is associated with membership on the national health team. This means our organization and our leadership must be prepared to develop policies, and make decisions that may not be popular with a segment of the membership.

I believe that our members want more than a reactive, defensive approach. Our provincial and national organizations have faced challenges that have forced them into uncharted territory over the past few years. It has been a learning experience. We are the better for the experience. We will continue to improve. Δ

*Ron J. Markey, DDS, MSD
President, Canadian Dental Association*

CDA Infection Control Conference Session reveals scientific, legal and ethical aspects

At the first Canadian Dental Association conference on the subject of Infection Control in the Dental Office, held in Toronto February 28-29, President Dr. Ron Markey told the gathering that the CDA needs to be a leader in formulating national health policies.

"We cannot take stands only on matters that affect dentistry", Dr. Markey continued. "Either we're health professionals, or we're not! The crunch has come because of AIDS, the issue that's really crystallized a lot of these things. Dentists cannot shirk the responsibilities they have to their own patients." In the matter of infection control, he concluded, "we must come up with a policy more concrete than we have now."

Conference Chairman Dr. Ken Zakariasen, Dean of the Faculty of Dentistry at Dalhousie University, said it was "an important conference. Infection control has been accepted for years as an integral part of dental practice. But AIDS is fatal. This has brought a whole new emphasis to infection control."

Participants

Participants in the morning session included Dr. Ray Wenn, a general practitioner from Charlottetown, P.E.I., and a member of CDA's Executive Council; Dr. Alan Meltzer (MD), Senior Medical Advisor, International Programs, Federal Centre for AIDS, Health Protection Branch, Health and Welfare Canada, and Dr. Janice Handlers, Associate Professor of Pathology at the USC School of Dentistry and the USC School of Medicine, Los Angeles, who is presently engaged in AIDS research at Dalhousie University.

Ethics and law

In the afternoon session, chaired by Dr. Roy Thordarson, Executive Director of the College of Dental Surgeons of British Columbia, the gathering heard some answers to ethical and legal problems posed in the diagnosis, treatment



The presenters at the Conference gather with the chairman and CDA President. From left to right are: Dr. Ron Markey, CDA President; Dr. Alan Meltzer, Federal Centre for AIDS; Dr. Janice Handlers, USC School of Dentistry; Dr. Ray Wenn, member of CDA's Executive Council and a GP in Charlottetown, P.E.I., and Conference Chairman, Dr. Ken Zakariasen, Dean of the Faculty of Dentistry, Dalhousie University.

and reporting of patients with infectious diseases.

Professional input was provided by Ms. Tracey Tremayne-Lloyd, who practises law with a Toronto legal firm, in litigation, much of which is health disciplines advocacy; Benjamin Freedman, PhD, Associate Professor at McGill University's Centre for Medicine, Ethics and Law, who is also Clinical Ethicist at the Sir Mortimer B. Davis — Jewish General Hospital of Montreal, and Ms. Yvette Perreault, a Registered Psychiatric Nurse, who, since 1985 has been an AIDS support counsellor for the AIDS Committee of Toronto.

'Concerns and questions'

Dr. Wenn said he was speaking as a general practitioner "with the same con-

cerns and questions that many of you have." He hoped to "place some perspective on the problem (of infection control) from a GP's point of view."

Dr. Meltzer congratulated the CDA "for taking this initiative. Dentists have been leaders as health care professionals."

He told his audience that "we have to assume that every patient is potentially infected. So we must adopt good guidelines. We need to educate the dental office staff and the general public. The guidelines will never be perfect — but they're necessary."

Dr. Handlers said "certainly organized dentistry has not been remiss in infection control." Concern about treating AIDS patients is a major one, but she is also much concerned about the threat of Hepatitis B, transmitted by patients.

PHOTOS: J.C. METCALFE



Three of the principals who offered counsel and answered questions on legal and ethical considerations. From the left: Ms. Yvette Perreault, support counsellor for the AIDS Committee of Toronto; Dr. Benjamin Freedman, Associate Professor at McGill University's Centre for Medicine, Ethics and Law, and Dr. Roy Thordarson, Executive Director of the College of Dental Surgeons of British Columbia, who was moderator of the afternoon session.

Regulations on infection control are needed, "but most would agree that a voluntary compliance system is the most desirable.

"If you don't want to regulate yourselves, there are a lot of people and agencies out there who are ready to regulate you and impose fines, etc. . ."

She chided those who have been negligent about receiving protection against Hepatitis — "much more of a hazard." Still too many have not taken advantage . . . "despite the availability of Heptavax and Recombivax. I don't know what it takes to make people adhere to the guidelines!"

Dr. Handlers urged great caution against needle stick injuries and recommended protective gloves, masks, eyeglasses and "even a separate pair of shoes for the office."

She then outlined effective sterilization methods.

Legal and ethical problems

Dr. Freedman commented on the obligation to treat the AIDS patient. He said that historically, in spite of the time honored picture of dedication of health professionals, the "record has not been good." Physicians fled when confronted by the Black Death."

He said that although you can't reject an afflicted person, "not everyone is

emotionally able to deal with this. But you must refer the patient to another professional."

Ms. Perreault noted that "people have a right to dental treatment. You (dentists) have a corner on the market. If you're not going to do it, where will people go for this treatment?"

Ms. Tremayne-Lloyd said that no one in society is obliged to do anything . . . but the professionals "do have an obligation to give treatment. If not, you are exposing yourself to Human Rights prosecution." Under law, she said, a handicapped person is a protected person. If treatment is refused to such a person, a suit launched as a result would not be covered by insurance. If not civil action, the professional could run the risk of professional punishment "under your own health disciplines board, for misconduct. . . action that is "disgraceful, dishonorable and unprofessional. Your licence to practice could be revoked." She added that referral is not an issue. "Referral is not discrimination . . . if we're not equipped to deal with this."

Dr. Freedman noted that if treatment is refused to infected patients, they will conceal it. Dentists who do not refuse treatment will be inclined to get "an unfair burden of such cases." If dentists conceal from other patients that they are treating known carriers, or conceal that they themselves are HIV positive, "or lying, in

any manner . . . this is dangerous. The unknown is far more risky than the known."

Ms. Perreault believed there "should be lots of AIDS prevention literature in dentists' waiting rooms. The dentist should act as a role model in leadership in education about this in his neighbourhood."

Workshops

On the second day of the Conference, provincial and national representatives gathered to draft CDA policy statements on various aspects of infection control.

Dr. Roy Thordarson prepared and provided a first draft of a CDA position paper on the ethical/legal problems in dealing with infectious patients.

An intensive discussion based on this draft was conducted by a group in which Dr. Ken Skinner, Past-President of the Manitoba Dental Association, acted as moderator.

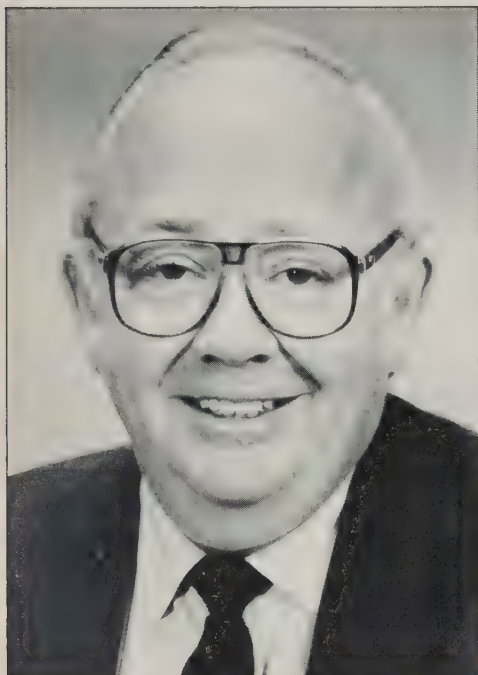
A scientific position paper which had previously been drafted and circulated to all dentists in Canada, was reviewed and discussed by a second group. The moderator of that group was Dr. Ralph Barolet, Dean, Faculty of Dentistry, McGill University.

Following the Conference, redrafted position papers incorporating the consensus of the deliberations were submitted to the Interim Board of Governors meeting to be the bases of CDA policy in infection control. These policies will be published in a subsequent edition of this Journal.

The Canadian Dental Association is grateful to the following sponsors who have furthered the science of infection control by helping to make the Infection Control Conference possible:

- ☐ The Canadian Fund for Dental Education
- ☐ The Dental Industry Association of Canada
- ☐ Johnson & Johnson Inc. — Dental Division
- ☐ 3M Canada Inc.
- ☐ Dentsply Group of Companies
- ☐ Great-West Life Assurance Company
- ☐ Ash Temple Limited
- ☐ Capcad Inc.
- ☐ Denco Canada Ltd.
- ☐ HCC Hygenic Corporation of Canada Inc.
- ☐ Merck Frosst Canada Inc.
- ☐ Sci-Can — A Division of Lux & Zwingenberger Ltd.
- ☐ Microbex Aseptics Inc.
- ☐ Premier Dental (Canada) Inc.
- ☐ Siemens Electric Limited. △

Dr. Rod Moran named President of Royal College



Roderick L. Moran, DDS, Dip. Paed., FRCD(C)

Dr. Roderick Moran of Toronto, a past-president of the Canadian Dental Association, is now serving as President of the Royal College of Dentists of Canada, succeeding Dr. Michael J. Crompton, of Moncton, New Brunswick.

Also elected at the fall, 1987 RCDC Council meeting were: Dr. Charles G. Baker of Edmonton, as Vice-President; Dr. Edward E. Chesko of West Vancouver as new Councillor representing the Periodontics Section, and Dr. David Kennedy of Vancouver to the position of Chief Examiner in Pediatric Dentistry.

Dr. Moran

Dr. Moran, who was awarded his DDS degree in 1961 from the University of Toronto, also earned his diploma and certificate in pediatric dentistry there in 1967. He became a Fellow of the Royal College in 1972.

Since 1967 he has served as Director of Dentistry at the Hugh MacMillan Medical Centre in Toronto and from 1970 to 1986, was Director of Continuing Education at that Centre.

Dr. Moran has been very active in organized dentistry circles since graduation. In addition to his term as President of the CDA in 1978, he has been President of the Ontario Dental Association, the Canadian Society of Dentistry for Chil-

dren and National Chairman of the latter since 1975.

He is responsible for clinical teaching of postgraduate Pediatric Dentistry at the University of Toronto, and is Treasurer of the Canadian Dental Service Plans Incorporated.

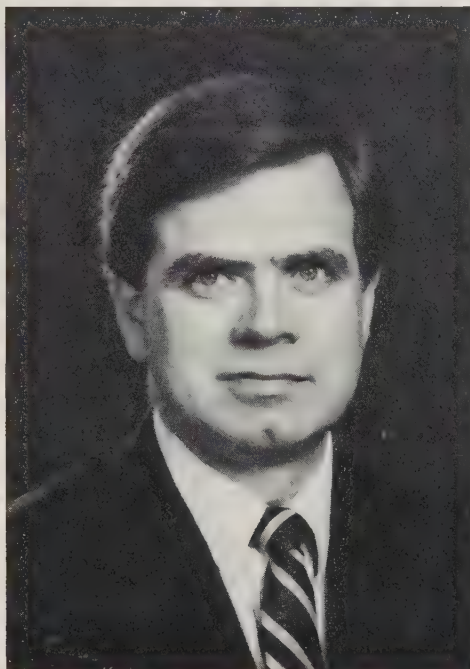
Dr. Baker

Dr. Baker graduated with his DMD degree from the University of Manitoba in 1968 and an MScD from the University of Toronto in 1975. He became a certified specialist in Oral Radiology in 1978, which is the year he also successfully completed the Fellowship Examination at the Royal College.

He practised in Winnipeg until 1980, when he moved to Edmonton, Alberta. There he is serving as Professor and Chairman of the Department of Stomatology at the University of Alberta. Since 1968, he has been a Member of the Omicron Kappa Upsilon Honor Dental Fraternity.

Dr. Baker was a founder of the Canadian Academy of Oral Radiology in 1973 and was its President from 1984 to 1987. He is also active in the American Academy of Oral Radiology and the Radiological Society of North America.

He was first elected to the RCDC Council in 1984 as the representative of the Radiology Section and was elected as the



Charles G. Baker, DMD, MScD, FRCD(C)

Council's representative on the Executive Committee in 1986.

Dr. Baker is also the Chief Examiner for the College in Oral Radiology.

Dr. Chesko

Dr. Chesko was the only nominee from the Periodontics Section of the College's Fellows and Members for the position as their representative on the Council. This will be for a three-year term, ending in 1990.

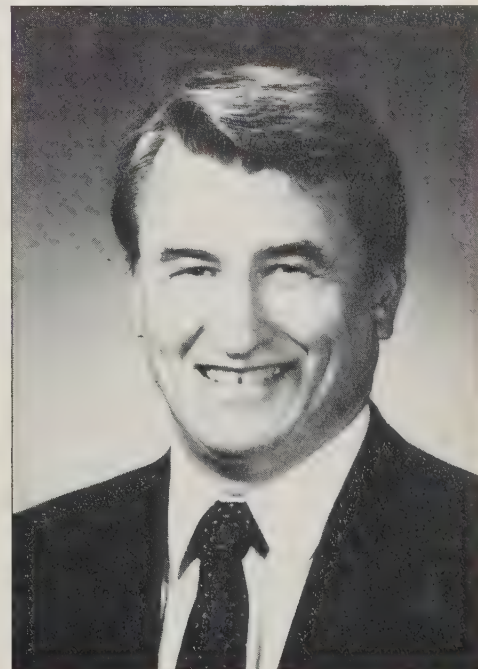
Following his graduation in 1964 with a DMD from the University of Manitoba, Dr. Chesko conducted a private practice in Winnipeg until 1969, when he assumed a full-time teaching post at his Alma Mater.

In 1970, he undertook postgraduate studies in Boston and was awarded his diploma in Periodontics in 1972. Dr. Chesko then began a private practice in that specialty, and at the same time began teaching part-time at the University of British Columbia's dental school.

In 1986-87, he served as President of the Canadian Academy of Periodontology and is coordinator of the Academy's 1988 annual meeting which will be held in Vancouver in June.

Dr. Kennedy

Dr. Kennedy was appointed to the position of Chief Examiner in Pediatric Den-



Edward E. Chesko, MSc, DMD, FRCD(C)



David B. Kennedy, LDS, RCS, MSD, FRCD(C)

tistry effective January 1, 1988, for a three-year term. He has been one of the examiners in that Section since 1984, serving with Dr. Georges Perreault of Montréal, as Chief Examiner.

Born in England, Dr. Kennedy obtained his LDS RCS (England) at Guy's Hospital, London, in 1968. He then earned an MSD from the Pedodontic Department at Indiana University, in 1971. He became a Fellow of the RCDC in Pedodontics in 1976.

Dr. Kennedy conducted a private practice in the specialty of Pedodontics in Vancouver until 1979, when he entered the graduate program in Orthodontics at the University of Washington. This led to another MSD in 1981. In the same year he successfully completed the Part I (Membership) examination at RCDC in Orthodontics.

Dr. Perreault chose not to accept a second three-year term as Chief Examiner, but all others whose first terms came to an end in 1987 have chosen to serve again. △

Did you know?

According to a study by the Health, Weight and Stress Clinic at Johns Hopkins University, there are approximately 29,000 weight-loss methods available for those of us who dream of being slim. However, Johns Hopkins Clinic Director, Maria Simonson, warns us that only about 6 per cent or 1,740 are "worth a damn".

NRC launches study of new approaches to health care costs

The National Research Council has undertaken four major studies to focus Canadian research and development efforts on crucial national issues and on new technologies needed by Canada in the face of growing economic pressure.

The studies will examine ways of refocussing existing NRC expertise and developing new approaches to address new technology areas in transportation, resource industries, optoelectronics and health care costs.

"These studies will play a key role in shaping future developments in science and technology and in establishing economically significant programs involving NRC, industry, universities and other government researchers," says Dr. Larkin-Kerwin, President of the NRC.

Health care

The Canadian health care system is headed for a crisis due to rising costs and limited financial resources, the NRC news report states. Many of the cost containment approaches tried to date are considered unsuitable because they limit either access to or quality of, health care services.

NRC will examine the role it can play in a national effort to develop technologies aimed at maintaining health care quality while containing costs. Efforts will concentrate on developing reliable medical devices and systems to assist care givers, and technologies which would increase patient mobility, enhance self-care of the elderly, reduce hospital stay, and expand possibilities for home care.

NRC will report back to Council on the four studies within one year, to seek approval for proposed future action by the NRC. △

CDA Retirement Savings Plan

Unit values: (Funds are valued weekly)

Fund	Unit values as at	
	March 31, 1988	February 29, 1988
Fixed Income Fund	60.84852	61.03736
Common Stock Fund	13.26543	12.97507
Money Market Fund	39.99201	39.76837
Balanced Fund	24.68686	24.44631

Interest rates:

Guaranteed Fund

Term	*Interest rates as at	
	March 31, 1988	February 29, 1988
1 yr	8.70%	9.50%
2 yr	9.10%	10.00%
3 yr	9.35%	10.25%
4 yr	9.60%	10.50%
5 yr	9.85%	10.75%

(*rates subject to change without notice.)

Total Assets (Market value) of the Plan as of:

March 31, 1988	February 29, 1988
\$91,771,822	\$88,688,420

For further information:



CDA RSP

Write:

CDSPI

Retirement Services Dept.
Suite 600
2 Lansing Square
Willowdale, Ontario
M2J 4Z3

or phone, toll-free:

Western and Atlantic Canada
and Ontario Area Code 807
only 1-800-268-5418
Quebec and Ontario, (except Area
Code 807) 1-800-268-3411
Metro Toronto Area 497-7117

* Effective November 6, 1987 the units of the Common Stock Fund were split on the basis of 10 new units for each 1 unit held.

"Improving your Financial Bite"

by Jerry Ackerman, PhD

In response to numerous requests for a column on personal finance management the Journal is pleased to present the first of a series "Improving your financial bite" by Jerry Ackerman, Ph.D.

When stock markets crashed (at last!) on October 19, 1987 public advice from banks and public figures, heavily repeated by the media, was "BUY THE BONDS".

They all meant the new CSB's — Canada Savings Bonds. Because? They offered security, no change in price, liquidity and a 9 per cent interest rate.

Could this free advice have been better? (Banks and brokers earn 3/4 per cent commission for having you buy CSB's through them). Yes, Indeed. The bonds I bought (October 16th) were Canada Government bonds too — equally secure, with a better interest rate (9 1/2 per cent) payable until October 1, 2001 (14 years). Liquidity was there — these bonds trade five days a week, the year around. In contrast, CSB's were fastened in for 3 months and the interest rate was expected to fall after 12 months. Also, I could readily borrow 90 or 95 per cent of their value without any other security. The best part — these bonds *could* change in price. Issued initially in 1976 at par (100 per cent of face value or \$1000 for a \$1000 bond) they had fallen to 57 in 1981-82 when interest rates went through the roof, had risen to 109 in late 1986, and were selling for 90 on the morning that CSB interest rate was set at 9.

I bought 50 bonds at 89. Commission of one quarter point plus interest since October 1st brought the total to just \$44,900. Prospective returns were:
(a) *Interest* — 9 1/2 per cent coupon meant I would get \$95 per year paid October 1 and April 1 on the \$1000 bond I was buying for \$900 — that's 10.55 per cent. Borrowing at prime plus three quarters (9.75 + .75 = 10.5 per cent) meant that this investment would carry itself.
(b) *Gain* — a capital gain would occur if interest rates would decline.

Rather abruptly, this latter occurred, courtesy the Canadian and U.S. central banks. In 10 days the bonds "hit par" i.e. sold at 100 — that's \$50,000.

market value for a \$45,000. investment — over 1 per cent a day. Then they settled back to below 95 and by February 9th (nearly 4 months later) rose briefly to 103. At the end of February they were trading just above 101.

Here are the gross results.

Bond Price	Market Value	Investment	Gain	Rate of Return
90	45,000.	44,900.	100	.2%
95	47,500.	44,900.	2600	5.8%
100	50,000.	44,900.	5100	11.3%
105	52,500.	44,900.	7600	16.9%

How did I improve these results?

Well, I borrowed 90 per cent of the \$44,900. i.e. \$40,000. Since the interest received more than covered the interest paid I could be solely concerned with the price change for the bond and its effect on my equity investment \$4900.

Here are the net results.

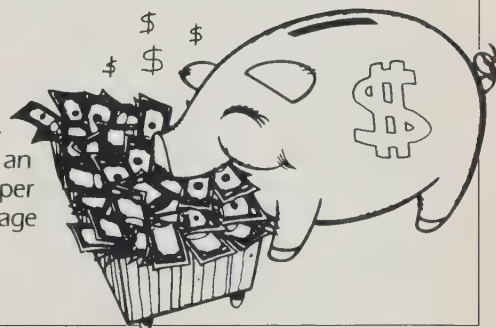
Bond Price	Market Value	Gross Investment	Gain	Net Investment	Rate of Return
90	45,000.	44,900.	100	4900	2.0%
95	47,500.	44,900.	2600	4900	53.1%
100	50,000.	44,900.	5100	4900	104.1%
105	52,500.	44,900.	7600	4900	155.1%

Yes, doubling your money in bonds is possible and (sometimes) within a few days or months. Δ

Dr. Jerry Ackerman, investment counsellor, has spent many years in the field of economics. His impressive academic qualifications are: B.Sc. (Cornell); M.S.A. (Toronto), and a Ph.D. in economics from Purdue. He is co-author of the best-selling book — "The New Start with \$1,000 — Do-It-Yourself Investment Strategies" and editor of GRIST — an investment newsletter. You can write to him at: Suite 102 — 1200 Pembina Highway, Winnipeg, Manitoba, R3T 2A7.

Did you know?

CDSPI has a message for smokers? If a 30-year-old dentist smoking a pack a day gave up the evil weed and deposited the approximate \$2,000 a year spent on cigarettes into an RRSP account earning a modest 10 per cent per year, the retirement "nest egg" available at age 65 would be over \$600,000. Phone Peter Dennett at CDSPI today!



Canadian Dental Association Convention

in conjunction with the
Alberta Dental Association
August 21-24, 1988

CDA in Edmonton . . . Countdown

Here it is May, and hopefully many of you are reviewing brochures that you received, from Travel Alberta, assisting you in your travel plans to ALBERTA, EDMONTON and the CDA Convention. Our convention committee is very busy putting the finishing touches on the convention program. As was mentioned last month, all convention speakers have been finalized and information about the various programs is included in the following pages. Read them over carefully and you will find that the scientific program has something of interest for everyone throughout each day of the convention.

We are anticipating that many of you plan to make this a family event and for this reason we are planning an excellent family program. For the children we have a trip to Fort Edmonton Park, the Space Sciences Centre, picnics, lunches and much more. For the spouses we have planned an orientation tour of West Edmonton Mall, a fashion show at the Fantasyland Hotel and an afternoon entitled, "Shop 'til you Drop". There will be a fun brunch for the children and spouses, as well as a High Tea planned at the Muttart Conservatory, the jewel of Edmonton's flower gardens. There will be no shortage of activities to keep everyone entertained and busy.

Exhibitors make a large contribution to the educational and financial success of a convention. It would appear from the initial response that our exhibit area, one of the finest in Canada, will be filled to capacity with a very interesting selection of exhibits. Directly within the exhibit area we will have table clinics presented on both Monday and Tuesday. This will allow you to spend valuable time in one central area for new products and ideas to take back to your practice.

Our social program has been designed with one goal. We want you to leave Edmonton saying to yourself, "I really had a wonderful time". Read on and you will find details of the social program. Top notch evenings are being planned.

If you have not already done so, NOW is the time to book off the dates of



William Becker, DDS

August 21-24 and make plans to enjoy this time in Edmonton.

One of the major Pre-Convention Program presenters is **William Becker, DDS**, of Tucson, Arizona, who will speak on "Scaling and Root Planing Isn't Enough".

Dr. Becker says the program will cover diagnosis of periodontal diseases, a simplified method for charting and the role of scaling and root planing in the periodontal treatment plan. Surgical procedures which are necessary for restorative dentistry will be discussed. The afternoon sessions will be devoted to discussing periodontal maintenance, the role of antimicrobials in periodontal therapy and periodontal regenerative procedures. Dr. Becker graduated from Marquette University School of Dentistry, Milwaukee, Wisconsin, in 1961, and later, at Baylor College of Dentistry, Dallas, Texas, received his MSD in Periodontics. He is a Diplomate of the American Board of Periodontology is presently a board director, and serves as secretary of the Academy. He has teaching appointments at the University of Southern California School of Dentistry and at the University of Michigan. Dr. Becker has done several clinical studies relating to guided tissue regeneration.

He conducts a practice with his brother Burt Becker, in Tucson, Arizona.

Some of the major presenters in the Convention '88 scientific program include:

Dr. Bernard Dolansky, an Ottawa, Ont. endodontist, who will present on this specialty on Tuesday, August 23. The session will be conducted in a classroom-style.

He has been active in organized dentistry since 1974, holding all executive positions in the Ottawa Dental Society and many in the Ontario Dental Association, culminating in the presidency, in 1986. Dr. Dolansky also served on the CDA Board of Governors. He graduated with a BA from McGill University in 1966 and received his DDS from the University of Montréal, in 1970. In 1973 he was awarded his MS in endodontics from Northwestern University.

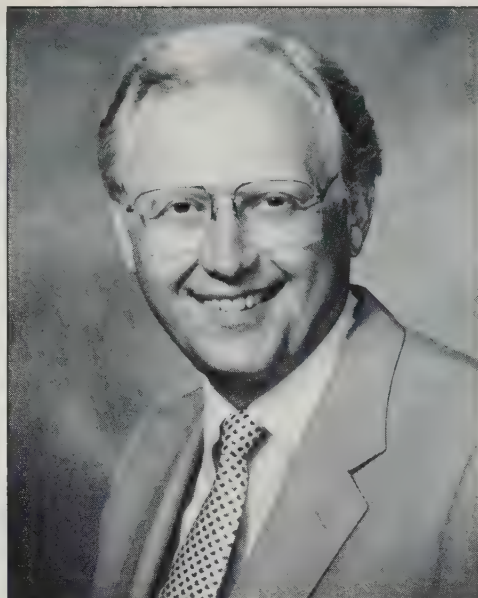
Jim and Naomi Rhodes of Phoenix, Arizona, will conduct sessions in Practice Management. The Tuesday, August 23 session is entitled "The Peak Performance Practice". They promise that their illustrated presentation will help a practitioner discover his/her potential for peak performance introspectively, interpersonally, organizationally and managerially.

Jim Rhodes spent several years in industry as a long range planner and brings to the dental profession many practice-building ideas and the motivation for timely implementation. From the business world he brings experience in team building, financial analysis, work simplification and long-range planning. He is the publisher of "Practicesmart" a newsletter for dental offices and he has made presentations in most of the states of the United States, Canada and Europe.

Naomi Rhodes is a graduate dental hygienist with extensive practice experience. As a "people person" she has been highly successful in offering leadership in interpersonal communications and motivation. She is the developer of a staff development program. She is a past president of the Arizona State Dental Hygienists' Association and a member of the National Speakers' Association. She speaks at a wide variety of seminars, association meetings and conventions sharing unique insights in staff training, motivation and human self-esteem. She too has spoken in 49 of the 50 U.S. states, Canada and Europe.



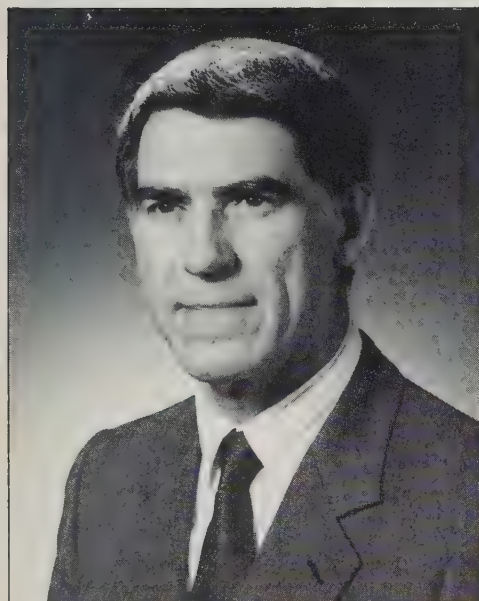
Bernard Dolansky, DDS, MS



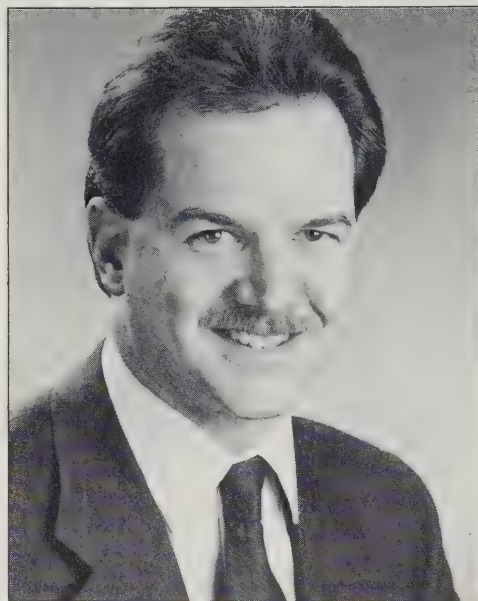
Jim Rhodes, BME



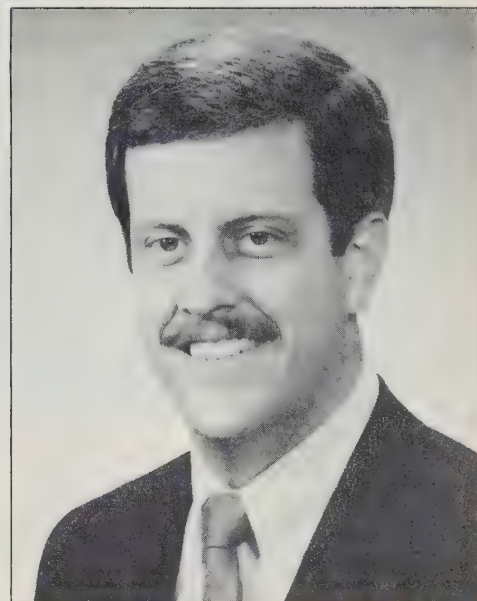
Naomi Rhodes, RDH, CPAE



R.P. Bryce Larke, MD, DC/Sc



Frank Spear, DDS, MSD



Edward H. Sauer, DDS

R.P. Bryce Larke, MD, DCIsc

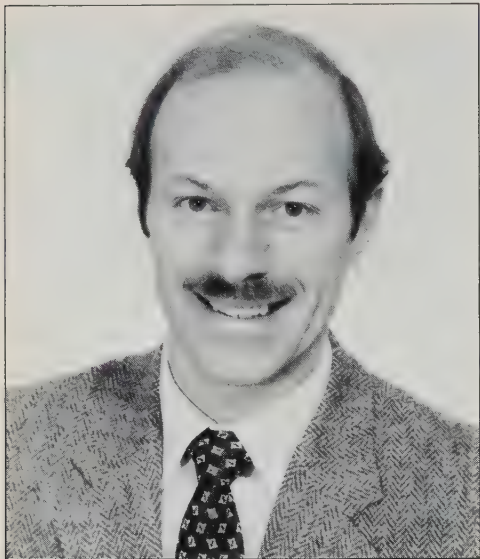
Dr. Larke, of Edmonton, Alberta, will present in a Wednesday, August 24 session — "Auto-Immune Deficiency Syndrome and Dentistry". He is a graduate of Queen's University, Kingston, Ont. He did postgraduate training in pediatrics and virology at the Hospital for Sick Children and the University of Toronto, where he was granted the degree Doctor of Clinical Science, in 1966. After holding faculty appointments at Case Western Reserve University in Cleveland, Ohio and at McMaster University in Hamilton, Ont., Dr. Larke returned to his native province of Alberta in 1975. He is currently Professor of Pediatrics, University of Alberta, and Deputy Medical Director, Canadian Red Cross Blood Transfusion

Service, in Edmonton. He has a major interest in the epidemiology of viral infections and their control by immunization. Dr. Larke assisted the Alberta Dental Association to develop guidelines for handling patients with hepatitis B and conducted a pre-licensure trial of hepatitis B vaccine among dental professionals in Edmonton. He has recently returned for sabbatical leave at the Pasteur Institute in Paris where he worked with the group that first described the two viruses causing AIDS. He is a member of the Alberta Advisory Committee on AIDS.

Frank Spear, DDS, MSD

Dr. Spear, of Tacoma, Washington, will present on Wednesday, August 24, on "Comprehensive Esthetics". He com-

ments that "achieving optimum dental esthetics for today's demanding dental patient is one of the most challenging tasks we undertake. It requires a thorough knowledge of the technical aspects of restorative dentistry, and also, the artistic elements of facial esthetics, tooth contour and arrangement. In addition, this information must be developed by the dentist, and then transferred to the dental laboratory for construction of the restoration." A DDS graduate of the University of Washington, Seattle, Dr. Spear is a dental faculty member, lecturing in the graduate fixed prosthodontic program. Since 1982 he has conducted a fixed prosthodontics practice in Tacoma, Washington. He has given presentations at various centres in the United States, Canada and Mexico.



Aaron H. Fenton, DDS, MS, FRCD(C)

Edward H. Sauer, DDS

Dr. Sauer, of Houston, Texas, will make a presentation on Capitation on Tuesday, August 23.

A graduate of Baylor College of Dentistry, Dallas, in 1977, Dr. Sauer is a member of the board of directors of Paid Dental Inc. Dr. Sauer has been active in the Texas Dental Association, the American Dental Association, and the Academy of General Dentistry. He is the Immediate Past President of the Houston District Dental Society.

He maintains an office in Houston, Texas.

Aaron H. Fenton, DDS, MS, FRCD(C)

Dr. Fenton will present on Tuesday, August 23, on the subject, "The Impact of Implants in Dentistry". His presentation will be one of several in a day-long Implantology Symposium.

He is past president of the Association of Prosthodontists of Canada and a Fellow of the Academy of Denture Prosthetics. Currently, Dr. Fenton is Associate Professor of Prosthodontics, Faculty of Dentistry, University of Toronto. He is also maxillofacial prosthodontist at the Mount Sinai Hospital, Toronto, and a member of the Toronto Osseointegration Study since its inception in 1979. Following his graduation from the University of Toronto in 1967, his internship and a period in private practice, Dr. Fenton received his certification in Prosthodontics from the Eastman Dental Center and an MSc degree from the University of Rochester, New York. He maintains a private practice in prosthodontics in Toronto and lectures on prosthodontics and implant related topics. Δ

Electronic anesthesia proves effective for allergic patient

Dental patients with a history of allergy to local, injected anesthetics now have an alternative for pain control, according to a report in the January 1988 *Journal of the American Dental Association* (JADA).

The report documents the case of a 56-year-old dental patient who needed fillings in two molars but had a history of allergic reactions to local anesthetics. Electronic dental anesthesia (EDA) was used as an alternative.

EDA involves placement of electrodes in the mouth at the area to be treated. An electronic device sends a mild current to the treatment area. The patient controls the amount of current with a hand-held dial.

Although the exact nature of EDA is not understood, researchers believe the electrical impulse blocks the transmission of pain signals from nerves to the brain, thus blocking perception of pain by the patient.

The patient in the reported case said that although he was apprehensive before treatment, he was comfortable with the

procedure and he readily volunteered to have subsequent treatment done with EDA. He reported that once he was comfortable with the EDA device, he decreased the current to examine whether the device truly blocked pain. By experimenting, he found a threshold level below which pain did occur.

"The patients' use of a control box permits them to increase the intensity of nonpainful stimulation if pain is perceived during treatment. In essence, patients are able to 'dial out their pain,'" according to Dr. Stanley F. Malamed, professor of anesthesia and medicine at the University of Southern California School of Dentistry.

Researchers at the USC School of Dentistry have used EDA successfully in 85 to 90 per cent of controlled test cases, which have included crown and bridge work, non-surgical periodontal treatment and fillings.

In the JADA report, Malamed cautions that EDA is not advisable for patients with epilepsy, chronic cardiovascular disease, pacemakers or for those who are pregnant or unable to cooperate, such as very young children and the mentally handicapped. Δ

Differential diagnosis of dementing diseases

At a recent conference in Bethesda, Maryland, the National (U.S.) Institute on Aging and the Office of Medical Applications of Research at the National Institute of Health, issued a report containing conclusions and recommendations concerning the different diagnoses of dementing diseases.

A free single copy of the consensus statement may be obtained from:

Michael J. Bernstein

Office of Medical Applications of Research
National Institute of Health
Building 1, Room 216
Bethesda, Maryland, U.S.A.
20892 Δ

Erratum

In the news article "Organ Donation: Health Care Professionals Support Through Commitment" which appeared in the April, 1988 *Journal* (Vol. 54, No. 4, Page 215) a regrettable omission occurred.

The second paragraph of the article should have read:

"A letter from the Honorable Jake Epp, Minister of the Department of National Health and Welfare, and CDA President Dr. Ron Markey on organ donation, is contained in this issue of the *Journal*. Please read it carefully and consider making a commitment in support of organ donation through completion of the organ donation cards provided."

CANADIAN DENTAL ASSOCIATION CONVENTION
EDMONTON '88

SOCIAL PROGRAM

Sunday Evening, August 21

REGISTRATION PARTY

Featuring the Internationally renowned
SHUMKA UKRANIAN DANCERS



Tuesday Evening, August 23

Fun Night



Featuring a Salute to the Old West.



Major Attraction: Las Vegas Entertainer
Boby Curtola.



1988 CANADIAN DENTAL ASSOCIATION CONVENTION

(hosted by the Alberta Dental Association)

AUGUST 21 to 24, 1988

EDMONTON CONVENTION CENTRE

Edmonton, Alberta

ADVANCE REGISTRATION FORM

** Dentists registering by June 15, 1988 will be eligible to win a draw of 2 tickets anywhere Air Canada flies in Europe and North America (winner **must** be present at registration round-up Sunday night) Registration after June 15th, or at convention add \$25.00.

PLEASE PRINT: (one form per delegate, duplicate form if necessary)

NAME: _____
Surname First Name

ADDRESS: _____
Street/Box No. City Province
Postal Code Telephone (office) (residence)

PLEASE CHECK APPROPRIATE GROUP:

☐ Dentist ☐ Office Personnel/Staff ☐ Technician ☐ Spouse ☐ Non-dental/guest ☐ Student

PRE-CONVENTION COURSES — LIMITED ATTENDANCE (Full day courses)

Dr. James Cottone — Infection Control for Today's Health Hazards in Dentistry — Saturday, August 20

Dentists \$125.00
Office staff/other 50.00

Dr. William Becker — Changing Concepts of Periodontal Therapy — Sunday, August 21

Dentists 125.00
Office staff/other 50.00

CONVENTION REGISTRATION:

Dentists — members Alberta Dental Assoc. (due to annual levy) Nil
— members CDA/ADA (American)/foreign 150.00
— non-members CDA 225.00

INCLUDES: Exhibits, Scientific sessions, Monday luncheon

Technicians 50.00
Office Personnel (includes all dental staff) 50.00
Guest/non-dental personnel 50.00
Students Nil

ALL OF ABOVE INCLUDES: CDA Exhibits and scientific sessions

Spouses 50.00

INCLUDES: Exhibits and scientific sessions (check if will attend)
Other activities: Mon. Luncheon West Edmonton Mall ☐
Tues. Family Fun Brunch ☐
Tues. High Tea and tour Muttart Conservatory ☐

Children's Program: 15.00 x

Names and ages: _____
INCLUDES: Registration Round-up plus: (check if will attend)
Monday — Tour day and lunch (zoo, Space Science Centre, Fort Edmonton Park) ☐
Tuesday — Family fun brunch ☐

SOCIAL EVENTS: (Convention Centre)

Sunday Evening — Registration Roundup 15.00
(with world famous SHUMKA DANCERS — early bird draw 8:30 p.m.)
Tuesday Evening — WESTERN NIGHT — Limited attendance (per person) 38.00
Monday Noon — CDA/ADA INAUGURAL LUNCHEON — Dentists only — If will attend check ☐ Nil
(After June 15th add \$25.00)

TOTAL

IMPORTANT: Make cheques payable to "Canadian Dental Association Convention".

Mail to: **Canadian Dental Association**

1988 CANADIAN DENTAL ASSOCIATION CONVENTION 1815 Alta Vista Drive Ottawa, Ontario K1G 2Y6

CANCELLATION POLICY: Cancellations received before August 1st, full refund. Cancellations after August 1st subject to a 25% administrative charge.
No refunds after August 15, 1988.

1988 CANADIAN DENTAL ASSOCIATION CONVENTION

(hosted by the Alberta Dental Association)

AUGUST 21 to 24, 1988

EDMONTON CONVENTION CENTRE

Edmonton, Alberta

HOTEL RESERVATION FORM

☐ Dentist Name _____
☐ Mr. Address _____
☐ Mrs. _____
(City) (Province) (Postal Code)
☐ Miss/Ms Telephone: _____ (Res) _____ (Bus.)

TYPE OF ROOM

☐ Single ☐ Double ☐ Twin ☐ Other _____

INDICATE FIRST THREE HOTEL CHOICES (Rates indicated single/double)

☐ Westin Hotel (C.D.A. Headquarters) \$ 95.00
☐ Chateau Lacombe (C.D.H.A. & C.D.A.A. Headquarters) 65.00
☐ Ramada Renaissance (Exhibitors & Technicians Headquarters) 65.00
☐ Four Seasons 88.00
☐ Sheraton Plaza 69.00
☐ Holiday Inn 56.00
☐ Fantasyland Hotel (Theme Room Only) 175.00
☐ Centre Suite 65.00
☐ Tower On the Park ☐ 1 Bdrm - \$55.00 ☐ 2 Bdrms - \$70.00 ☐ 3 Bdrms - \$85.00

Deluxe rooms are available upon request. All hotels are within walking distance from the Convention Centre except Fantasyland Hotel and Tower On The Park.

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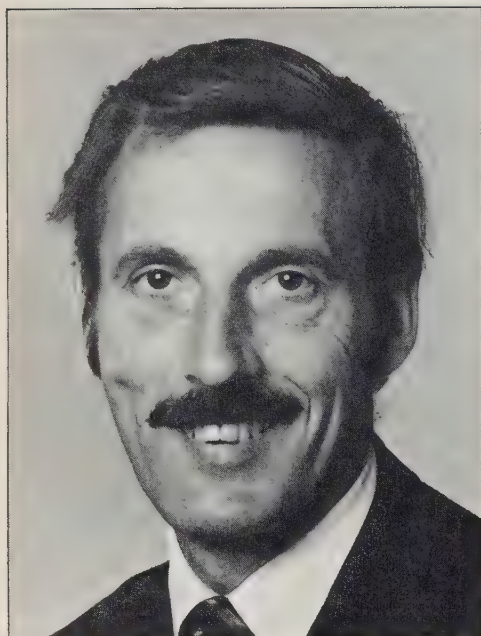
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Dr. Derek W. Jones

Dr. Derek W. Jones, Professor and Head, Division of Dental Biomaterials Science and Assistant Dean (Research) at Dalhousie University's Faculty of Dentistry was the recipient of an award of high international distinction at the annual International Association of Dental Research (IADR) meeting held March 9-13, in Montréal.

He received the "Distinguished Scientist Award." This is only the second time in the 34-year history of this prestigious honor that it has been awarded to a Canadian scientist. The previous Canadian recipient was Dr. Dennis Smith in 1976. Dr. Smith is Professor of Biomaterials at the University of Toronto.

Known as the Wilmer Souder Award, the honor is the oldest of the science awards given by the IADR in dentistry. It is named after Dr. Souder who was the motivating force in establishing the Dental Section of the National Bureau of Standards. It is designated to perpetuate the scientific ideals which he exemplified.

Derek Jones has conducted research on a wide range of biomaterials and material properties, covering ceramics, polymers, composites, dental cement and bone cement, as well as the effects of mercury in dentistry. Current research involves the synthesis of glass and polymer biomaterials and drug release from biomaterials.

Dr. Jones commented that "while the award brings personal satisfaction, I would like to acknowledge the contribution made by colleagues and staff, to our research program. However, what is more important is the recognition and prestige that the award brings to Canadian research and to Dalhousie University." △

The International Association of Gerodontology will hold its third international convention in conjunction with les Journées dentaires du Québec, from May 29 to June 2 at the Montréal Convention Centre.

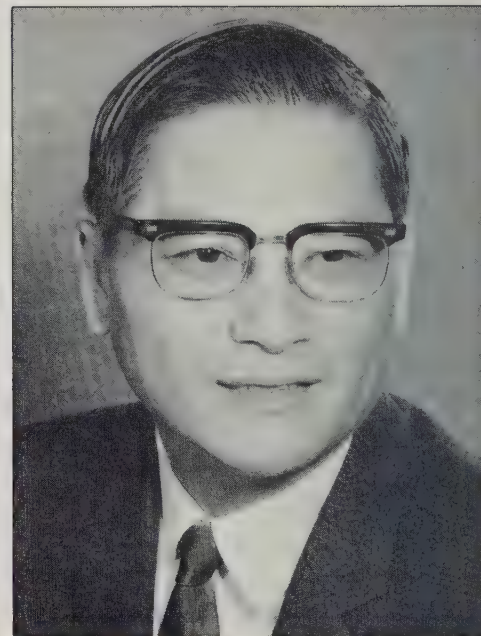
The goal of the Association is to unite, on an international scale, all persons and scientific organizations concerned with oral health needs of the growing elderly population.

Further information may be obtained from: Dr. Hélène Lemay, Département de stomatologie, Faculté de médecine dentaire, Université de Montréal. Telephone (514) 343-6754. △

Dr. Norman Levine, Professor and Head, Department of Pediatric Dentistry, University of Toronto, has been named Chairman of the Board of the Federation of Special Care Organizations in Dentistry.

Three agencies dedicated to special needs patients joined forces last fall to form the new Federation. They are: the American Association of Hospital Dentists (founded in 1937); the Academy of Dentistry for the Handicapped (founded in 1952) and the American Society for Geriatric Dentistry (founded in 1965). These organizations recognized in recent years that their missions in health care were overlapping as patients with disabling and handicapping conditions grew older and similar medical/dental interface settings were used to provide patient care. They also began to recognize that issues related to payment, quality and appropriateness and research and credentials, were common concerns.

The newly formed Board does not replace the boards of the three component organizations. It is rather, composed of five members from each of the boards and has overall leadership and management responsibilities. It is based in Chicago. △



Dr. So Wah Leung

So Wah Leung, BSc, DDS, PhD, the founding Dean of the Faculty of Dentistry at the University of British Columbia, who gained distinction in Canada and internationally, has been named an Officer of the Order of Canada by Governor-General Jeanne Sauv .

A graduate of McGill University (BSc 1943 and DDS, 1945), Dr. Leung received his PhD at the University of Rochester (New York) in 1950.

He went on to become a faculty member of the University of Pittsburgh School of Dentistry and later, the UCLA School of Dentistry.

Dr. Leung was active in the Canadian Dental Association, and served on the Council on Education. He was also a member of the National Dental Examining Board and the Committee on Dental Research of the National Research Council.

He has been a scientific consultant to several leading dental supply companies.

Dr. Leung served as Dean of Dentistry at UBC from July 1 1962 to June 30, 1977. He also served as Professor of Oral Biology from 1962 until December 30, 1983. In 1984, he was named Emeritus Professor of Oral Biology and at present, is Honorary Professor of Oral Biology. △

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Dental Awareness Program Update

Behind the Scenes at the Dental Awareness Program

Each month we use the update page to tell you about all of the exciting developments that are happening at the Dental Awareness Program. This month we're going to change direction a little bit and show and tell you about how some of these programs came to be and give thanks where thanks are due.

First Teeth

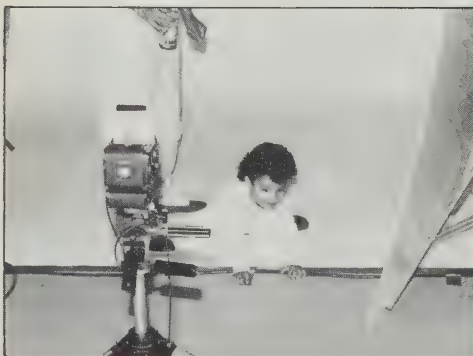
A debt of gratitude to the many professionals

The full debt of gratitude owed to the dental professionals who helped develop the First Teeth program could not be properly expressed in the short space available at the front of the booklet. These poor beleaguered professionals came through time and time again when asked to edit one or more of the book's five drafts or check for the accuracy of its charts and pictures.

We caught them for assistance in the early morning, the late afternoon, at the office or at home — even on weekends. Thanks again! You've helped to create a most important and successful new program.



"You want me to do what?"



"That's it for me thanks"

to the parents and kids

We would also like to mention the parents who vetted the books for readability and practicality, and came up with many suggestions on how to make this program a great tool in the daily chore of parenting.

And to the children who eagerly commented — with an honesty that only children could have — on the growth chart illustrations, we hope they enjoy the bright and lively educational tool that they played a big part in shaping. An honourable mention has to go to the young lad who, at first, refused to go to sleep without the illustration of the pink elephant next to him — true dedication.

and for the wonderful smiling faces

But did they ever take a lot of time to get.

Obviously, we wanted bright, fun and alive smiles for the materials in this program, and we got them in the end. But it took days, weeks and a number of shoots scheduled at the strangest of hours so as not to interfere with nursery school, kindergarten and, of course, nap-time.

In review, we also realized that it took every trick in the book to generate the happy faces that are now in print. There were prompting parents, coaxing from the other children, games, healthy snacks and even a special visit from Donald Duck. Yes, just when it seemed hopeless, one of the adults in the room started projecting his imitation of Donald Duck from inside of the camera saying "look I'm in here, can't you see me?" — and like magic the grins grew wide.

Speaking of smiles . . . there is Bob

I'm sure you've seen Bob. He's the simple but happy looking guy on all of this year's Dental Health Month theme materials.

Want to know why he's really smiling? Because of the seven original variations of Bob, he's the only one that ever made it out to the public eye.

He's made quite a hit of himself too. The profession is buying more Bob materials than of any previous DHM theme. And, in fact, it's been heard that Bob's favourite salutation — *Keep Smiling* — has taken over for the old standard — *Have a nice day* — in dental offices across the nation.

Bob's also on the air

It's true. Bob has two of his very own radio spots. Created new this year, they have been sent to stations all across the nation to help get across the Five Point Prevention Plan and the Keep Smiling message to motorists, home and office listeners nationwide.

And let's not forget Bastien — Bob's French alter-ego who has proven equally successful. Make sure that radio stations in your community have copies of them.

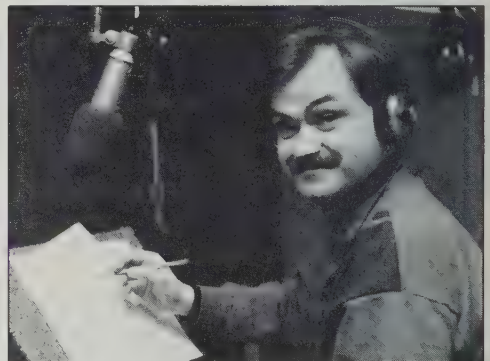
The making of the two radio spots Bob and Bastien are shown above and below, respectively.

And don't forget. The Canadian Dental Association's Order Section has plenty of DHM and DAP materials available all year long. To keep your office a communicating environment, order today:

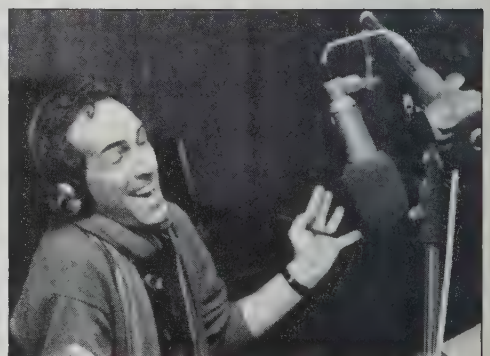
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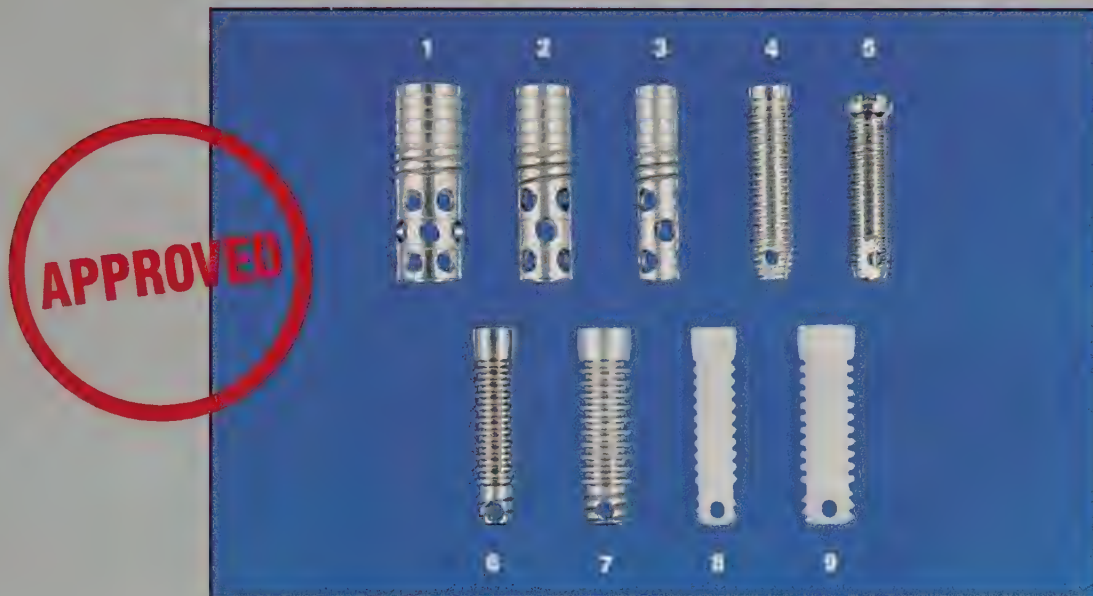


"A big hello from Bob"



"and Bastien too!"

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SYLLABUS OF COMPLETE DENTURES

Charles M. Heartwell, Jr.:
Arthur O. Rahn

Lea & Febiger — Philadelphia: 1986
\$56.50: 573 pp. illus.

This well illustrated syllabus is the 4th Edition; and sadly, the co-author, Dr. Charles M. Heartwell, Jr. passed away during the latter stages of printing.

The table of contents is very complete, outlining in detail the points covered within the text. The 24 chapters are sequentially organized to correspond to treatment within the dental practice. As with any text that appeals to teacher, practitioner and student, there is adequate stress on the principles of basic science — anatomy, pathology, physiology — that must be present in any successful prosthodontic procedure.

The text relating to clinical procedures frequently utilizes a step-by-step numbering method that allows the reader to readily comprehend technique. Different materials and methods are outlined with indications of advantages and disadvantages. There are frequent references to the lack of preciseness in a complete denture discipline — so much depending upon the variation in patient personalities, tissue tolerances and clinician judgement.

The chapter on laboratory procedures wisely opens with the admonition that although dentists seldom perform these procedures it is necessary to be at least familiar with the requirements. It then goes on to briefly indicate laboratory steps. The chapter on immediate dentures deals only with the in-office technique for a six maxillary tooth denture, making no reference to the common general-anesthetic operation of full arch extraction by an oral surgeon and subsequent insertion of the immediate denture.

In this edition, the chapter on Surgical Preparation for Complete Dentures has been rewritten by Dr. Gregory Parr with additional reference to ridge augmentation and implant procedures. The chapter on articulators has been revised and it is an interesting inclusion not always present in texts of this nature. The book is amply supplied with illustrations — over 480 — and although the author in the preface states that newer and clearer photographs are present, it is not always evident to the reader.

The chapter on Diagnosis contains an outline of "common drugs" and their

effects that can influence the successful treatment of a patient prosthodontically. There is a lack of consistency within this listing; it would be clearer to the reader if generic names were followed by brand names in an orderly fashion. Some of the drugs are not available in Canada, and one obsolete drug, mercurial salts, is rarely, if ever, prescribed today. Δ

This book was reviewed by:
Ralph Crawford, DMD
Winnipeg, Manitoba.

FLUORIDES AND DENTAL CARIES

Ernest Newbrun

Charles C. Thomas, Publisher
Springfield, Illinois
289 pages

"At a time when diffuse fears of chemicals, poisons and environmental pollutants have become widespread among the public, it is imperative that both dentists and dental hygienists are well informed on the properties of fluoride and their proper uses and advantages as agents for prevention of dental caries." This short statement by Dr. Y. Ericsson, who wrote the foreword, highlights the objective of this third edition of *Fluorides and Dental Caries*.

The role of fluorides remains paramount in the prevention of dental caries. During the past decade there has been a continuous expansion of our knowledge as to the mechanism by which fluorides prevent caries and the most effective way to utilize this regimen for prevention. A need to understand the biological aspects of fluoride metabolism in order to most effectively utilize it on a clinical level is what this book is all about.

This new edition features a new chapter on fluoride supplements and on the promotion and implementation of community fluoridation. It contains a lucid description of dental fluorosis, the latest data on the use of topical fluorides in the dental office, school and home and excellent chapters dealing with the mechanism of fluoride action and the metabolism of fluoride. A section of an analysis of the legal/social/economic ramifications of water fluoridation and a thorough description of fluoride toxicology rounds out the third edition.

Five new contributors have been added to the third edition in addition to the "old reliables" and this has added to the

worth of the publication. The chapter by G. Whitford on fluoride metabolism is highly recommended.

A major weakness in many multi-authored textbooks, and to a lesser extent in this book, is the lack of continuity and synthesis. This reviewer would have enjoyed seeing a greater effort in the direction of detailing the dramatic decline of dental caries in children and young age groups due to the use of different fluoride regimens, particularly the universal use of dentifrices. Further, potential for the development of fluorosis as a result of the multi-use of fluoride in different preparations requires a greater emphasis, especially to students of dentistry.

Fluorides and Dental Caries and specifically, this updated version, remains the most comprehensive work relating to fluorides in preventive dentistry. It is a compilation of work found in diverse fields and publications into a single volume that is easy to read and easy to understand. The scientific expertise and competence of the contributors assures a high standard. This book is recommended to practitioners and students of dentistry and dental hygiene and those wishing to update themselves in the subject of fluorides and dental health. Δ

This book was reviewed by:
Dr. Gordon Nikiforuk, Professor
Faculty of Dentistry
University of Toronto.

CROWN & BRIDGE PROSTHODONTICS: AN ILLUSTRATED HANDBOOK

D.N. Allan and P.C. Foreman

PSG Publishing Company
Littleton, MA 1986
143 pages \$24.00

The uniqueness of this textbook, in particular its short-length (143 pages) and its illustrated format, demand that it be considered in the light of its perceived role. The authors state that it is to serve as a "mental cocktail for the tired practitioner" and a "distillation of some of the essence" for the overwrought student. If one agrees that there is a need for such a text, then it would be reasonable to expect a concise, well-balanced presentation of up-to-date clinically applicable information.

The format of this book uses copious line drawing illustrations in a manner somewhat similar to that introduced by Shillingburg, Hobo and Whitsett in their "Fundamentals of Fixed Prosthodontics". As to the content, the authors state that their consideration involved "what to leave out, rather than to include".

The first of the six chapters is on case assessment, is very brief, and aside from the diagrams, does little more than review information that is requested by most standard clinical charts. The second chapter on post retained crowns presents an extensive classification of very many of the current pre-formed and custom post systems. This together with the techniques described, seems to lean heavily on the philosophy that a non-vital tooth with a post and/or a post and core is a stronger tooth, a matter about which the literature offers considerable debate. A short chapter on full veneer crowns offers a good pictorial sequence of the steps in preparing a porcelain jacket crown but a less clear description of a posterior full crown preparation. The preparation steps for full bonded crowns

(PFM's) are presented to the degree that they differ from the PJC and the full gold crown. The fourth chapter entitled, "Impression Materials and Techniques and Occlusal Registration" gives a good overview of current elastomeric impression materials and their uses. Soft tissue management and occlusion and articulation are each covered on just one page. Copper band impression techniques are carefully described and illustrated. An eight page chapter, including text and drawings, covers temporization. The differences between Scutan and Sevriton as they are used in direct temporization techniques are detailed.

A separate section on bridges includes considerable reference to material discussed earlier in the book. It describes bridge designs including some of the more uncommon approaches such as pinledge and spring cantilever bridges. Pontics are discussed from a historical perspective, as well as from current usage patterns. Brief sections deal with non parallel abutments, as well as bridge problems and bridge removal. In a short section on bonded bridges, the book attempts to

review the various retention mechanisms but is less than clear, as it fails to follow generally accepted terminology.

Overall, while the authors have made a noble effort to present "the essence" their self-imposed restrictions have compromised the result. The book instead of providing the reader with confidence in crown and bridge procedures, could in some instances lead to real confusion. This is especially possible where procedures have been introduced with minimal amplification of the clinical factors and where line drawings lack uniformity and clarity. An example is the simple statement that the removal of a full length, firmly cemented silver point should be done with a round bur. Realistically, the removal of a silver point, particularly in this way, can be a difficult and risk-filled procedure. In as much then, as the "tired practitioner" or the "overwrought student" attempts to follow this handbook, where it fails to present an adequate clinical panorama, he/she is likely to be disappointed. Δ

*This book was reviewed by:
Dr. D.R. Gratton, Chairman
Division of Fixed Prosthodontics
U. of Western Ontario*

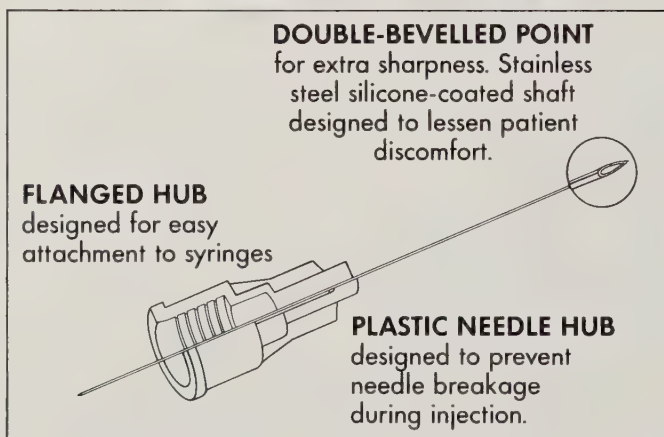
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DAI: THE DENTAL AESTHETIC INDEX

Naham C. Cons, Joanna Jenny,
and Frank J. Kohout

*The University of Iowa,
Iowa City, U.S.A.
\$20.00, 134 pages, 1986*

This monograph reports the results of a research project conducted to establish a dental index which could be used to screen population groups to determine the need within these groups for orthodontic treatment. The monograph is available in typewritten format with a soft cover binding.

The basic premise of the study is that orthodontic therapy has little correlation to either the dental health or the general physical health of the individual patient, but does have a major correlation to the psychological, social, and general well-being of the individual patient. Since the main reasons reported by patients, or the parents of younger patients, for seeking

orthodontic treatment are psychological, social, or aesthetic in nature, therefore, an index that would access the aesthetic qualities of dentitions would be useful in determining the need for treatment. As a result of their research, the authors present us with the Dental Aesthetic Index (DAI).

The authors state that the more an individual's dental appearance deviates from what is considered excellent, the more likely it is that that person will experience social handicaps and as a result need or seek out orthodontic treatment. Various indices to measure malocclusions that have been developed previously, are discussed and compared, and several are used to develop the DAI. To obtain the DAI for an individual, 10 objective physical measurements of occlusal traits associated with dental aesthetics as perceived by the public, are measured. These 10 traits are as follows: 1) missing incisor, canine, and premolar teeth in the maxilla or mandible; 2) crowding in the incisal segment; 3) spacing in the incisal segment; 4) diastema in mm.; 5) largest anterior irregularity — maxilla; 6) largest anterior irregularity — mandible; 7) anterior maxillary overjet in mm.; 8) anterior mandibular overjet in mm.; 9) vertical anterior openbite in mm.; 10) antero-posterior molar relation. The figures obtained from each of these measurements are multiplied by their regression coefficients, their sum is calculated, and to this sum is added a constant. The number thus obtained is the DAI score, and it is plotted on the Social Acceptability Scale of Occlusal Conditions as supplied by the authors. This latter scale gives a percentile score for the individual on a dental aesthetic continuum from 0, the most socially acceptable, to 100, the least socially acceptable.

The score obtained can be used to establish the need and possible demand for orthodontic care in a target population. As stated by the authors, this is a screening and not a diagnostic instrument which places the individual's dental appearance on a continuum from excellent to poor, at various percentiles on an aesthetic continuum. Because this index is not a diagnostic tool, the screening could be performed by well trained and calibrated dental auxiliaries. In addition to estimating orthodontic needs in population groups, the index can provide dental epidemiologists and social scientists with a research tool to rank an individual's dental appearance on a scale of

societal norms for socially acceptable appearance.

The primary weakness of this index is that it has been developed for use on the permanent or adult dentition only and has not been tested for use on the mixed dentition. If further research could extend its application to the younger age groups, then its usefulness as a screening tool for orthodontic treatment needs would be greatly enhanced.

This monograph would be useful reading for dental epidemiologists and orthodontists with an interest in research. The level of statistical analysis employed and reported upon is of a highly sophisticated nature and therefore beyond the comprehension of most individuals lacking advanced training in this field. However, the authors give detailed instructions concerning the methods necessary to conduct a survey utilizing the DAI and are willing to supply those interested with further information.

The Dental Aesthetic Index proposed in this monograph has the potential to become a valuable addition to the screen-

ing armamentarium of the dental profession, dental administrators, and all those involved in the planning of orthodontic treatment programs. Δ

*This book was reviewed by:
Ray E. McDermott, DDS, MSc,
Associate Professor and Head,
Dept. of Community and Pediatric Dentistry
University of Saskatchewan.*

Remember



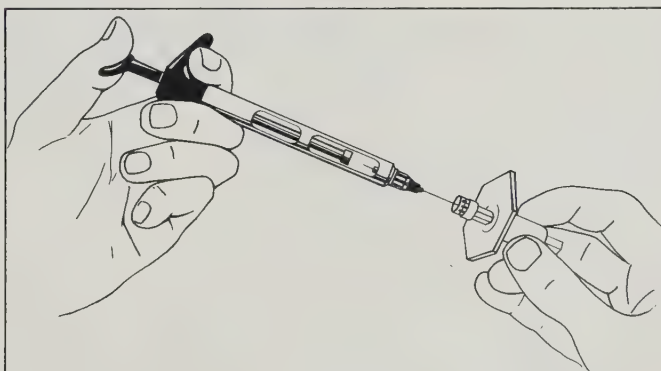
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Tooth Fractures

Les fractures dentaires

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EFFECTIVE COMMUNICATION SKILLS

A Key to Practice Building

Robert A. Brandon, DDS

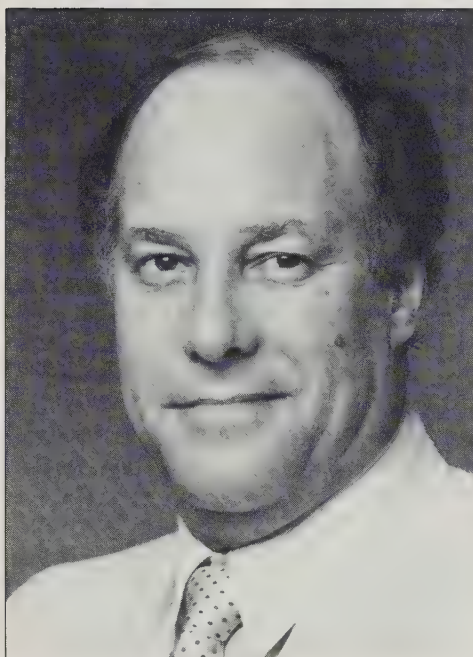
Dr. Brandon is Assistant Professor, Division of Community Dentistry, Faculty of Dentistry, University of Western Ontario, London

He is on the Staff of University Hospital Dental Department. His area of interest is Teaching Dental Practice Management.

Effective interpersonal communication skills lead to a more fulfilling professional and personal life and, as a by-product, a busier practice. We have all learned over the years to interact in a somewhat mechanical fashion in frequently recurring situations. Our well intentioned, rote responses to patients questions can sometimes be perceived by our patients in a negative fashion. As we unconsciously develop such habit patterns, we consider our responses to always be helpful. The focus of this article is directed toward patient perception of our communications and to encourage us to evaluate the effectiveness of our own communication patterns.

I believe that there is a central reason for patients choosing a particular dental practice, for referring their friends and family members to that practice and for remaining within that practice. I believe that it is the patient's perception of the degree of caring and empathy shown them by the dentist and the staff. This empathy is transmitted by communication.

Interpersonal communication is the transference of meaning between individ-



Robert A. Brandon, DDS

uals. The listener or the reader supplies the meaning to our words, not the speaker or the writer. It is the responsibility of the speaker or writer to ensure, as far as is possible, that the message transmitted is the same as the message received (and perceived). The often heard statement "OH, I thought that you meant. . ." illustrates this point. The process of communication involves the speaker or writer having a thought that they wish to transmit. That thought is coded into words and/or actions and is transmitted. The listener or reader receives this coded

message, decodes it and registers a thought. With all this coding and decoding it is not surprising that messages frequently get misinterpreted and we can see the difficulty in precisely understanding others and getting them to understand us. This fragile process is made more complex when we realize the relative impact of the verbal and non verbal components of communication:

- 1) **Verbal:** the actual words or content (7%)
- 2) **Vocal:** tone, expression, tempo, timbre, resonance, inflection (38%)
- 3) **Visual:** what can be seen by others, eg. facial expression, posture and gestures (55%)

What we say to a person is not the key issue; rather it is what a person thinks (perceives) that we have said.

The two major ingredients of any communication transaction are verbal and non verbal; the non verbal being the most powerful. If the verbal message and the accompanying non verbal cues are at variance, the message of the non verbals will dominate. An example of this would be a person saying "I'm glad to meet you" — without a smile. One message transmitted, a different message perceived! We cannot, not communicate. Whenever two people are together communication always occurs. It may be at the more dominant non verbal rather than at the verbal level.

We cannot guarantee congruity in our communications but we can influence the

desired result by monitoring our communications on an ongoing, active basis. We may wish to look for methods to improve the effectiveness of our communications.

Our patient's perception of us as a dentist is formed long before we ever see the patient. This initial impression is difficult to change and is much longer lasting than any subsequent impression.

To illustrate this effect let's trace the possible path followed by a potential new patient, requiring immediate restorative care, through our office. This patient has no regular dentist, is somewhat apprehensive and is in the process of deciding where and whether or not to seek comprehensive treatment. *Please look for the verbal and non verbal messages sent to our patient throughout these scenarios. Look also for other opportunities to enhance you communication effectiveness in similar situations.*

The Potential Patient Telephones for an Appointment Some Points to Consider

- Is the telephone answered promptly?
- Does the receptionist's tone of voice reflect a "smile"?
- Is the identification of the office and of the receptionist well handled — does this sound like an office that you would go to for care?
- If it is necessary to put the patient on hold, do we first ask their permission?
- Is the hold button used rather than just covering the handset, to prevent unwanted conversation in the office from reaching the caller?
- Do we go back on the line at a maximum of one minute intervals and offer to return the call expediently, if it is more convenient for the caller?
- Does the receptionist have a note pad handy to be able to jot down information for quick reuse to enable her to personalize the conversation eg. by using the caller's name?
- Are we careful about terminology, avoiding the use of slang eg. "certainly" instead of "OK"?
- Do callers feel that they have been given choices wherever possible eg. would you *prefer* a morning or afternoon appointment?
- Do we allow the caller to hang up first to avoid accidentally cutting them off?
- Has a welcoming/confirmation letter been sent to the patient along with an office philosophy pamphlet, if time before the appointment permits?

In general, has the appointment been made in such a fashion as to lead us to believe that the patient is glad that they called *our* office?

The Importance of Telephone Techniques

The telephone is both the front door to our office and our most important instrument. The person using the telephone has the responsibility of creating a good image for the person for whom they are making or taking calls. The first and most long lasting impression of both the dentist and atmosphere of the office is created during that initial telephone contact with our staff.

It is important that the receptionist realize that during a telephone conversation, she must overcome the disadvantage of not having many of the non verbals available to use to establish rapport. In addition the caller feels that he/she has the individual, undivided attention of the receptionist. The caller does not realize that there may well be a flurry of activity going on at the reception desk, simultaneously with their call. If it is not therefore possible for the receptionist to give the caller her undivided attention, an appropriate explanation may be in order, along with a request for permission to put the caller on hold or to return the call shortly. The message perceived must be that their call is important to us and we want our conversation to be a quality one.

In view of the importance of the telephone we may want to ensure that our "back up person" is fully trained and that our office manual or telephone procedure manual covers the specific techniques which we wish used. Terminology should be examined for possible miscommunication. For example "The Dr. is busy" could imply to the listener — The Dr. is too busy for you! or "The Dr. is with a patient" could evoke in the listener; what the heck, I'm a patient too! How about "Are you an old patient?"

The New Patient Arrives at the Office

- Does the reception area non-verbally welcome and reassure the patient? Is it neat, bright, pleasantly lighted, are there healthy plants and a wide range of up to date periodicals?
- Does the seating arrangement force perhaps unwanted eye contact between patients?
- Does the business area convey an open feeling or is there a "speak easy" sliding door separating the receptionist from the patient. Are there any other non verbal barriers in our office?
- Does part of the business area allow for confidential discussion between the receptionist and patient?
- Are there verbal barriers such as signs on the reception desk that could be misin-

terpreted eg. report to receptionist upon arrival. Have we chosen synonyms with positive connotations?

- Is the patient immediately and warmly greeted?
- Does the receptionist personally project and reinforce the positive image previously created over the telephone?
- Is the medical and social history taken with a view to respect for confidentiality? Are open ended questions used to encourage patient input and involvement?

Our questioning "who may we thank for referring you" is important for more than the obvious reason. This says to the patient, non verbally "we invite you to refer your friends and family who may not have a dentist, to our office for care"

- Is the patient's appointment time respected?
- If the dentist is behind schedule are appropriate explanations and apologies offered within five minutes of the appointment time? Had the anticipated length of delay been explained to the patient?
- If beverages are made available to your patients, is the area visually pleasing and well maintained? Which has the stronger non-verbal impact; a styrofoam cup or a cup and saucer?

The New Patient Is Escorted to the Op

- Does the assistant cheerfully greet the patient by name and introduce herself?
- Is the decorum and professional appearance of the assistant consistent with the continuing positive impression?
- Does the assistant tell the patient what to anticipate (removal of fear of the unknown) and begin to develop a high trust/low fear relationship?
- Is the operatory neat, free of physical barriers and ready for the patient?
- It's often a good idea to be our own patient. Take a walk around your office with a critical eye. What is the non verbal message that is being sent to our patients? Sometimes it is helpful to ask a friend to do this for us as our familiarity may make it difficult for us to see the forest for the trees.

As the reader can see, before ever having met the dentist, the patient has, through the verbal and non verbal communication transactions, already formed a strong first impression. The stage has already been set for the future dentist/patient relationship.

The dentist's greeting and introduction offers an opportunity to determine how the patient feels most comfortable being addressed.

During the Procedure

- Many patients have some degree of apprehension. Our verbal and non verbal communication efforts can allay that apprehension. It is important to empathize with, and alleviate their concerns — not simply to unconsciously dismiss them.
- Do we remove the fear of the unknown for the patient by telling them, as we proceed, what we are doing and what to expect next?
- Do we return control to patients by telling them that if they feel any discomfort, all that is necessary is for them to raise their hand and we will stop?
- Do we explain things like gloves, rubber dam lubricant, and topical anaesthetic? Even positives like the use of flavoured topical could be disconcerting and incomprehensible unless they are explained. We also maximize these positives by explanation.
- Do we non-verbally communicate our concern for patients' welfare by opening sterilized instruments and contra angle bags in their presence.
- Do we have a tape player and selection of tapes available for our patients. Do we invite them to bring their own favorite tape?
- Our patients identify very closely with our staff. The dentist/staff relationship at the chairside transmits a powerful message. I believe that there is a strong positive correlation between the patient's perception of the quality of the restorative dentistry performed and the patient's perception of the professional regard that the dentist and staff display toward each other.
- Have we made dated notations on the chart as to personal items of significance to our patients; their likes, dislikes and referrals to our office. We would naturally like to comment on these things in the future but our memories alone sometimes fail us.
- Our good intentions of oral hygiene instruction can have negative connotations if accompanied by an (unconscious, judgemental) pointed finger. The connotation of saying "you should" can be judgemental. Maybe we "should" or others (and on ourselves) too often.
- Do we leave the patient alone in the operatory only if absolutely necessary. If it is necessary, do we adjust the chair comfortably, excuse ourselves, let the patient know how long we will be and offer periodicals to pass the time? Overall, the patient in the chair expects to be the star and centre of our attention. Our verbal and non-verbal communications can positively reinforce this notion.

- Do we summarize for the patient what to expect post-op and of our availability after hours, if necessary? Do we advise our patients what will be done at the next visit and why?
- Do we provide a wall mirror in the operatory to allow patients to adjust their hair, makeup, ties etc. in privacy before returning to the reception area.
- Is the patient escorted to the reception desk in the same caring manner in which they were accompanied to the operatory?

The Reappointment Procedure

This final impression is almost as important as the first impression. Our communication efforts should be directed toward letting the patient know that we value them, reinforcing the desirability of the next visit and offering a choice of time that will be reserved exclusively for them.

Active Listening

One of the barriers to effective communication is distraction. Think of yourself, during a conversation. The speaker says something that triggers a thought and your mind wanders off. Does this happen because we are not interested in what the speaker is saying? No, not necessarily. It is explained by the fact that our brain can operate at 500 w.p.m. while the fastest speaker speaks at only 150 w.p.m. The resultant excess capacity of the brain accounts for this wandering off phenomenon. When this happens we can appear to be uninterested and unconsciously transmit a very negative message. We also of course risk missing what the speaker is trying to tell us.

Attending Skills are a group of processes which decrease the possibility of these mental lapses while they simultaneously encourage and draw out the speaker. Think of someone you know who is really an effective listener. You can remember how you really opened up to that person; how they really got to the bottom of your problem and, how important what you had to say seemed to them. You probably felt important and sensed a real rapport with that person. These attending skills are important enhancers to the communication process. I will briefly touch on some of these tools.

Non-Verbal Cues (Body Language) — These are all of the things that we say — with our mouths closed! Are we maintaining eye contact, are our arms folded defensively across our chest, are we fidgeting, are we pointing threateningly with our index finger, what is our facial expression? Inappropriate non-verbal cues send a very strong negative message and inhibit meaningful communication.

We can improve both our speaking and listening skills by becoming conscious of body language.

Minimal Encouragement — These let the person know that you are listening and are interested in what they are saying. It is possible to draw the person out and encourage them to expand their communication. We do this with the use of gestures, such as nodding our head and verbalizing "yes", "I see", or "I understand". Communication is encouraged. It is important to resist the temptation to "jump into the conversation". We want to hear what the speaker has to say — not what we have to say.

Open Ended Questions — These are questions which can not be answered with a simple yes or no. They bring out not only facts but also feelings and further demonstrate your interest in the speaker and in what is being said. An example of an open ended question would be "how did you feel about that?"

Verbal Tracking — When the speaker wanders off the topic, a short question or statement about the topic will bring the speaker back on track and demonstrate your interest in the topic as well as increasing the effectiveness of communication.

Paraphrasing — This technique plays back, in a condensed version, the content of what the speaker has said. It serves three functions.

- a) It lets the speaker know that you are paying attention to what they are saying.
- b) It crystalizes what the speaker has said.
- c) It gives you the opportunity to be sure that you have understood what the speaker is trying to tell you.

Listening for understanding is truly an art. We must listen for what isn't said as well as for the spoken word. We must watch for the expression gestures, voice inflection and the "mood" of the speaker to increase the probability of our accurate understanding of the transmitted message. Improving our listening skills, although enjoyable, is hard work. Our current listening ability is the result of practice. This unconscious practice has become a habit. In order to improve our skills we must first change our listening habits. Practice with our new listening skills will eventually make them habitual.

Some Additional Communication Thoughts

- No one has yet figured out a way to get a second chance at a first impression.
- The most persuasive thing that we can do for a person is to listen and make them

aware that what they are saying is important to us. We all have an unquestionable desire to "be somebody" and to be recognized for it. Next to our families and loved ones we all consider ourselves the most important person in the world. People don't care how much we know until they know how much we care. Let's hone our active listening skills.

- Non-verbal communications are more powerful than verbal. If the two are perceived to be in conflict, the non-verbal will dominate.

- Do you allow a little time before and/or after procedures to talk to patients at eye level?

- After extensive treatment, do you phone patients to ensure that they are comfortable?

- Do you encourage patient referrals, and, effectively encourage more referrals

by expressing appreciation? Positive activities positively rewarded at end to be repeated?

- Does the quality of our notes of appreciation for references, send the desired non-verbal, as well as the verbal message?

- Do you remove fear of the unknown for your patients?

- Are the telephone techniques utilized in your office a good reflection of you as a dentist and as a person? Is your telephone the front door to your office that you would like it to be?

- Our positive interpersonal communications are limited only by ourselves — let's address them actively. This article is intended to serve as a beginning framework for individual communications development.

- Do you continually monitor your com-

munications, asking yourself "Could what I said have been misinterpreted by the listener?" Δ

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A RETIREMENT SCENARIO

W. Walker Shortill, BSc, DDS
Victoria, B.C.

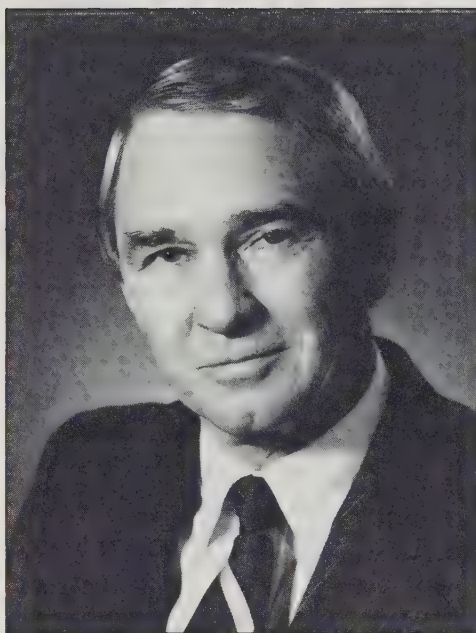
Dr. Shortill, a native of Winnipeg, has been offering counsel to dentists in the field of practice management for several years. He founded Dominion Dental Advisory Services Ltd., in 1982, in Winnipeg. Since 1985, he has been based in Victoria, B.C. and much of his time is now devoted to the evaluation of dental practices.

After service in the Royal Canadian Navy during World War II, Dr. Shortill attended the University of Manitoba, where he earned a BSc. In 1951, he received his DDS from the University of Toronto. He set up practice in Winnipeg, and had experience as an associate, as a solo practitioner and solo with an associate. In 1966, he was one of the founders of a major group practice, Winnipeg's Assiniboine Dental Group. He has previously been published in this journal and has been a part-time faculty member at the University of Manitoba, as Practice Management Coordinator.

Dr. Shortill is a former President of the Manitoba Dental Association, has served on several committees of the CDA and has been a board member of the Canadian Fund for Dental Education.

We are never too young to start thinking of retirement. This should be a treasured goal and one which beckons with sultry and seductive arms and charms. The average dental practitioner therefor should be constructing on three economic foundations to achieve this goal.

One is the current growing investment in your home, your cottage or other recreational assets, condominiums etc. Generally speaking, as you continue to make regular substantial payments on these real estate properties your net worth will be increasing, with their value being enhanced and your loans against



W. Walker Shortill, BSc, DDS

them decreasing. By the time you are 45-55 years old, you will probably own them outright.

Taking advantage of the maximum annual RRSP contribution allowable, throughout one's practicing lifetime will assure, more than any other action, the establishment of a very significant pool of funds with which to create your pension. Be it self administered or totally in the hands of a sound financial institution, capital gains and the miracle of compounding interest will work wonders on your behalf.

Seek the ultimate in professional financial advice and constantly monitor your fund's performance. Do not succumb to the blandishments of strong sales pitches, rather guide your fund's progress and growth by the star of caution and care. The government has been making progressive improvements to the retirement plans for self employed tax-

paying citizens. Increasing annual contributions, more age options when you may withdraw your funds and flexible investment vehicles create your retirement pension. Universal federal programs such as Old Age Pension and Canada Pension Plan will "kick-in" for you and your spouse. Here again different options present and it is well worth your while to approach your regional authorities in these matters. With a clear understanding of all these time frames you will be able to most effectively marry your personal funds, with those of the government to provide you with optimal results.

The third economic foundation which will allow you to build a satisfactory and realistic retirement income is your practice. It is only during the last fifteen years that the significance of this asset has taken on real meaning. As recently as ten or twelve years ago there was literally no value to an established practice other than an ascribed small amount for the depreciated value of the leasehold improvements, the equipment and furnishings and the sundries. Up until then it was traditional for graduates to "hang their shingle" and begin practice.

'Goodwill' Value

A marked alteration in demographics — i.e. relation of dental manpower to population growth and the impact of the profession's superhuman efforts in preventive dentistry has contributed annually to an ever decreasing ability for a graduate to establish an independent practice and sustain economic viability. Consequently, to invest in a mature practice has become a very practical alternative. This situation has justifiably produced a very salutary recognition of a dental practice's "true worth". It has always seemed unpleasantly unique to me that health professional practices,

nurtured and sustained by dint of great conscientious endeavor and community service ended up with little, or no goodwill value where, in comparison, the average commercial business or service industry was, justifiably at time of sale, able to allocate very realistic figures in relation to goodwill. A dental practice could not enjoy this recognition. A lifetime of practice building — 30-50 years — represented by lacing on kids' skates at the community club, PTO meetings, charitable fund raising, church work, Chamber of Commerce activities, high profile presence allowing for the maturing of a successful dental practice, strangely was not quantified at time of disposal.

It is too bad that this long overdue recognition has been brought about by the competitiveness of the marketplace. At long last, what should have always been the just and due of the mature dentist has come about through the maelstrom of the hard, cold marketplace. This would seem to fly in the face of our vaunted interest in professional status — but practically we are only now receiving similar awards which all our business and other professional colleagues expect after years of building a successful enterprise.

How to take advantage of this new opportunity will be important to your retirement and life choice plans. I believe that every dental practitioner should see merit in having his/her practice value appraised. Our time of leaving our practice is not totally dictated by our own desires. Disability or death can occur at any time. Without an evaluation report on record, the attempt of a disabled dentist or his estate to dispose of the practice is weakened! Any delay drastically depresses the goodwill factor in its value. Since this important intangible can now represent more than $\frac{2}{3}$ of a practice's value, it is important to pin it down now. Hopefully one would not have to resurrect the report from one's safety deposit box but it is comforting to have it available as a guideline to draw on for instant reference and to serve as a benchmark for negotiation of sale.

Who can you find to evaluate your practice? Over the past years several companies and individuals purport to possess this skill. For the most part, they serve not only as consultants, to advise on the evaluation, but also as brokers to buy and sell practices. A fiduciary responsibility then exists and one could ask where the licensing and qualifications exist to substantiate this responsibility. Fees and commissions can be substantial so you would be advised to examine their track record.

Traditionally, an individual or an estate sought advice and service in this field from a supply house representative. I believe, for the most part, they have been reluctant to assume this role. They are important in determining the fair current market value of equipment, sundries and leasehold improvements — who is better informed in these matters? However the important matter of assessing goodwill value is often vague. Often they resort to rules of thumb which are questionable, e.g. 50 per cent annual gross or six months' net income etc. These formulae are too simplistic to provide a potential purchaser with sound guidelines to determine the investment and professional potential or an assurance to the vendor that he is not seen as a "ripoff artist" or on the other hand selling himself short.

The other resource people are your accountants and lawyers. Though both of these professionals are skilled in business appraisals there can be a sorry lack of empathy for assimilating all of the factors that constitute a structure or matrix for "plugging in" figures or facts which can best appraise a dental practice's Goodwill Value.

Using, in a corroborative manner all of these sources, an experienced dental practitioner would be best suited to provide the most valid practice valuation. If this consulting service is provided on a fee basis then the project is even more objective! This same individual might also assume the role as a broker in the buy/sell process or as an advisor. If marketing the practice and handling the mechanics of the agreements of sale are too formidable, then, after careful investigation, one of the current companies or individuals serving in this capacity could prove helpful!

To set the scene so that your practice will serve an important function in your retirement plans you should be "getting ready to get ready". With the contemporary "facts of life" prevailing it would be foolish to adopt the traditional attitudes of letting your practice "wind down". Better — by far — to begin now, to be aggressive in all aspects of practice building, refining recall systems and positively conditioning patients to the importance of prevention and early diagnosis. It would be advisable to have your practice appraisal done while it was functioning at its mature best. It is never too early to possess a practice evaluation report. This can be called upon in the event of death or disability, negotiating an associate's buy-in for practice sale on retirement, or to use as a part of a bank presentation if you were seeking funds for

business opportunities. Simply plugging in new cash flow figures and patient statistic figures can always make the report current. If an estate has to fumble to get this done, a severe hiatus results in unnecessary erosion of the goodwill value as weeks go by.

Groom an Associate

To market the practice, to select a purchaser and to conduct the sensitive negotiations can prove very difficult for most practitioners. The greatest chance for success in these affairs is to groom an associate! There has never been a time in dental annals where there is a greater need for mature, successful practitioners to open their arms and their offices to welcome on board graduates from our faculties to join them in serving the public. We should stop decrying retail dentistry as they expand and absorb an increasingly high number of our graduates. By making their services more accessible with store front mall hours they require manpower. To extend your hours and services and put a cap on your fixed overheads, a similar strategy could enhance your income and your practice's value.

Many feel their practice is not busy enough to sustain or justify an associate. It can be amazing how new patient flow will increase with your enhanced team's ability to treat more patients more quickly. Many dentists, after several years, begin to focus treatment on those areas of practice they have more interest and more competence in — say prosthetics and cosmetic dentistry. Thus an inordinate amount of preventive orthodontics, periodontics, and oral surgery is referred. The new graduates often possess confidence and skills in these services and with discretion a great deal of that referred gross income can be retained and the associate's business assured.

The recruitment of the most appropriate associate could commence at the source — namely — the 4th year class of your local faculty. If you are not on staff yourself you probably have friends and colleagues who are. A letter to the Dean's office could also help. Another great resource is your supply house representatives. They often hear about associates in other offices who would like to move for any number of reasons.

Written agreements are mandatory. They need not be ponderous and full of legalese. A very clear picture of when and how the associate is remunerated must be present. The patients and charts are clearly owned by the practice. Holidays, number of days worked in the year, con-

tinuing education opportunities all should be identified. Facilities and staff availability for the associate should be defined. Reasonable restrictive covenants should be part of the agreement to protect the owner's practice.

In addition to some of the above basics, the second year agreement could offer some incentives — a "first refusal" to purchase the practice. Possibly a sliding scale per cent allocation to gross incomes exceeding a certain amount by month. More flexibility in hours worked and holiday time could be considered. The associate would be pleased and honored to secure a "first refusal" option. It would be an assurance that you thought highly of him. If this confidence continued throughout the second year, then hints should be dropped that partnership considerations could be entertained for year three (if you exceed three years the goodwill value you can ask begins to be eroded as they are now significantly building their own following and creating their own goodwill which must be recognized). As you continue to set the scene for such future discussions, you should let the associate know that you possess an evaluation report recently done by a third party. It would also be wise to generalize about the suggested price so that they do not labour under some misapprehension as to the true market value.

Offer a Partnership

If the first two years of associateship have proved to be compatible and nurtured a growing respect for each other, then it would be timely to offer your colleague a partnership. If there is just one principal dentist involved then it could be 50 per cent or an equal share.

Since current practice evaluations fall into a common range of \$100,000 and up to \$300,000 these figures could chill discussions. However, when the negotiation figure ranges from \$50,000 to \$150,000 for a half share, things become more realistic and possible. The projected income advance from associate to partner status allows these sums, as investment, to be paid off with interest, in under five years.

Such an opportunity is rare in general business ventures. The goodwill for an investment in taxicab licences varies from Montreal to Vancouver in the area of \$70,000 — \$90,000! A sub-lease for six weeks on a herring fishing licence on the west coast can be \$70,000! Thus, by any measure, the current prices for dental practices can be considered an excellent professional challenge and a sound business investment.

The vendor receives "just" compensation for his "start-up costs", his community promotion to establish "goodwill" and his current fair market value for his leasehold improvements, his equipment and his sundries. Even if invested most conservatively the new capital received would allow him to practice one day less a week without interrupting his present cash flow. Many other options could be employed in the use of this major cash infusion prior to retirement.

Needless to say, tax ramifications will play a large role in the sale agreement and the vendor and purchaser must seek sound advice to counter these impacts. Usually each has to "give" a little to be fair to each other in the process.

Partnership agreements, buy/sell agreements and cross insurance present more hurdles for the uninitiated to scramble

over and through. Seeking the best advice from their accountants and lawyers should resolve these problems and produce a climate where two professional colleagues can work and share together for their own family benefits and their patients' best interests.

Selling his share

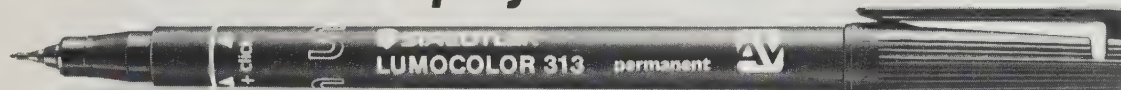
As the years march on, the senior partner (chronologically only) is now able to more effectively and more easily, effect buyout of his share to achieve full retirement.

Again several options present — such as a phase "down and out" over a chosen and mutually agreeable period of time, or a full buyout and an allowance to serve in an associate role or a total retirement.

The goodwill value should be reduced by a percentage, in five year increments, as the partnership continues. This would allow for the influence the new partner has on the practice growth. However from the time of the original partnership agreement negotiation, the practice has undoubtedly advanced in value. Consequently this whole process will have resulted in an appreciable increase in each partner's net worth!

Regardless of certain doom and gloom hanging over dental practice today — the fact that practices now enjoy a palpable and significant value should lend some credence to the fact that the Golden Age of dentistry is with us now. Of course this reflects not only its clinical and scientific advances and challenges, but also its unquestioned economic rewards in later life which until very recently have not been recognized. Δ

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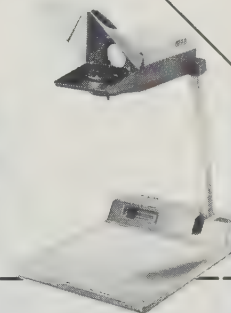
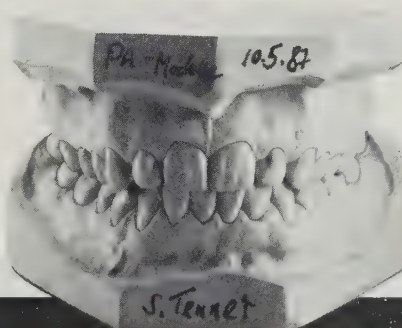
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Effect of manipulative variables on
**POROSITY AND
MICROLEAKAGE
OF AMALGAM**

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ABSTRACT

For many years, it has been assumed that amalgam restorations possess an acceptable seal at the margins. Indeed, this assumption would appear to be a fundamental requirement for all dental restorations in an oral environment.

SOMMAIRE

Durant de nombreuses années, on a cru que les restaurations à l'amalgame sont suffisamment étanches près des bords. De fait, il semble que ce soit là une exigence fondamentale pour toutes les restaurations dentaires.

Marginal leakage of dental amalgams has been studied extensively, both *in vitro* and *in vivo*. Different methods have been utilized to measure the amount of leakage such as dyes, radioactive isotopes, bacteria and also air pressure.¹⁻³ By all methods of examination, amalgam restorations are susceptible to early penetration at the amalgam-tooth interface.

Pores or voids are observed in the microstructure of dental amalgams regardless of their particle shape or composition, and are recognized as part of their structure.⁴⁻⁷ Several possible causes of voids commonly cited are: air incorporation during trituration or condensation, hardening process, alloy composition, particle size and manipulative procedures.^{6,8}

The presence of pores or voids in the structure of the dental amalgam mass has received little attention. Many studies⁸⁻¹⁰ have shown the significance of the porosity upon the physical properties of the amalgam, but there are no studies on the influence of the porosity on the microleakage of dental amalgam restorations. The purpose of this study was to investigate the effect of porosity on microleakage of dental amalgam using an air pressure technique.

Materials and methods

Four commercial alloys were chosen in regard to their particle shape and composition. Two spherical alloys, one lathe-cut alloy and one admixed alloy were studied (Table I). Manufacturer's recommenda-

tions for mercury to alloy ratio and trituration time were followed. To investigate possible influences of ratio and trituration time on microleakage, the ratio was increased and decreased by 2 per cent while the trituration time was kept constant. The trituration time was also increased and decreased by 30 per cent while the mercury to alloy ratio was kept constant.

The amalgamated mass was packed into plastic molds prepared from acrylic sheets. A cylindrical drill was utilized to create a hole (4 mm in diameter and 4 mm in depth) in a plastic mold.

Condensation was carried out manually using a condenser with a round flat and smooth end with a diameter of 2 mm. During the condensation, care was exercised to remove excess mercury before another increment was added. All molds were overfilled and excess amalgam was carved. The specimens were stored at 37°C for 24 hours.

Measurement of Microleakage

Microleakage was determined after 24 hours. A special apparatus was used as described by Fanian, Hadavi and

TABLE I

Alloys studied

Shape	Copper Cont.	Comm'l Name	Manuf.	Batch No.
Spherical	Low	G.C. Moderate	G.C. Dental	E07
Ad-mixed	High	Tytin	S.S. White	037711
Lathe Cut	High	Dispersalloy	Johnson & Johnson	7J715
	Low	N.T. Dentalloy	S.S. White	46296

TABLE II

Alloys	Mercury/Alloy			Trituration Time (Sec.)*		
	High	Normal	Low	Increased	Normal	Decreased
G.C. Moderate	.77:1	.75:1	.73:1	13	10	7
Tytin	0.80:1	.77:1	.74:1	10 ¹ / ₂	8	5 ¹ / ₂
Dispersalloy	1.02:1	1:1	0.98:1	26	20	14
N.T. Dentalloy	1.02:1	1:1	0.98:1	26	20	14

* Vari mix amalgamator at M-2 setting was used with all alloys.

TABLE III

Marginal leakage as affected by mercury to alloy ratio

Alloy	Mercury/Alloy Ratio		
	Increase 2%	Normal	Decrease 2%
Moderate	*40 (6)	50 (5)	43 (4)
Tytin	455 (40)	480 (50)	515 (74)
Dispersalloy	405 (39)	530 (49)	505 (55)
N.T. Dentalloy	1200 (100)	1450 (85)	1030 (102)

* Mean values with standard deviations in parenthesis
 — Not significant at $P < .05$

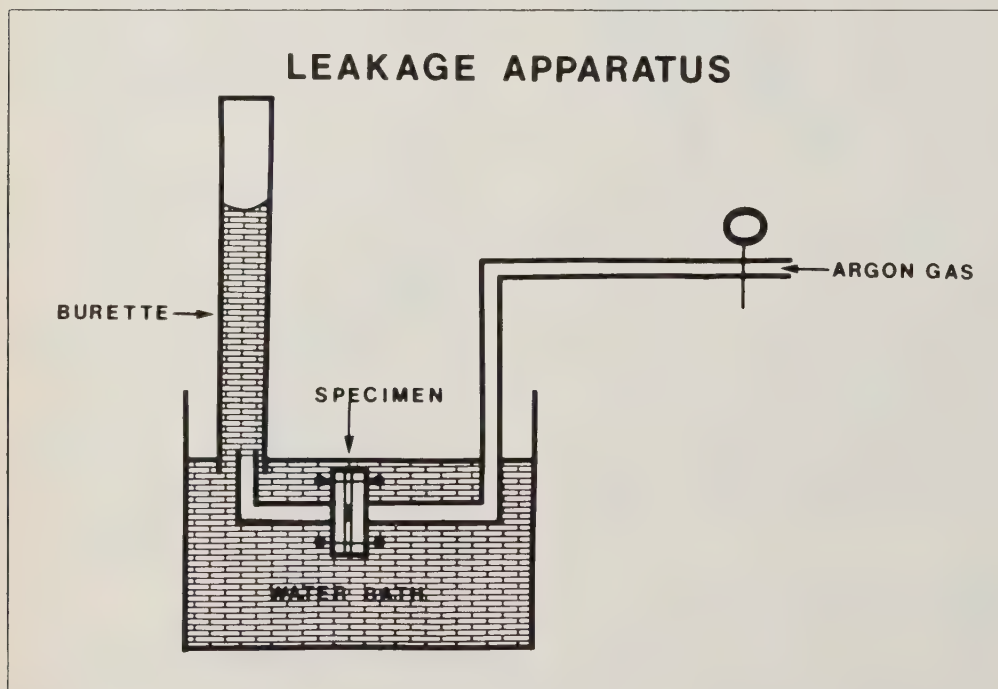


Fig. 1. The gas (Argon) flowing through the amalgam-mold interface was collected in the inverted graduated burette with full capacity of 50 ml of water.

Asgar.¹¹ Essentially it consisted of a specimen holder and a tube. One end of the tube was connected to an Argon gas tank and the other end led the leaked gas through amalgam-mold interface to an inverted graduated burette (Fig. 1). A pressure of 60 p.s.i. of Argon gas was applied to the amalgam-mold interface and this pressure was maintained throughout the experiment. The time necessary to empty 50 ml of water from the graduated burette was considered as the leakage value. Higher time span to empty it would mean less leakage, i.e., best marginal seal.

Four commercial brands of amalgam were utilized and three samples were made for each of five manipulative variables, so that a total of 60 specimens was prepared. The manipulative conditions are summarized in Table II.

Porosity Determination

After microleakage measurement, some specimens were prepared for microscopic examination. Specimens were embedded in a autopolymerizing casting resin and were polished following standard metallographic procedures. The polished specimens were washed with distilled water, dried in an air blast, followed with a "hypo" ($\text{Na}_2\text{S}_2\text{O}_3$ sodium thiosulfate) swab-rinse. After the hypo-rinse the specimens were once again washed with distilled water and dried in a blast of filtered air.

The samples were then photographed at low magnification (75X) under a metallographic microscope (Leitz Wetzlar 620567, Ernst Leitz, W. Ger.) using Polaroid film (type 55P/N, 4×5 in.). The metallographic technique depends on the validity of the examined sections, which represent a true sample of the whole specimen. By utilizing low magnification, almost the entire specimen's surface was photographed.

All specimens were examined under the microscope. Only two samples of each variable having similar porosities, however, were photographed. A ranking system was used to evaluate the degree of porosity; such as high, medium and low. For the leakage study, one-way analyses of variance and multiple comparisons were used at the 95 per cent level of confidence.

Results and Discussion

Results of this study were summarized in Table III and IV and Figs. 2-7. From Tables III and IV and Figs. 2 and 3 it can be seen that the New True Dentalloy leaked least in every manipulative condition (mercury to alloy ratios and trituration time). Next in order were Tytin,

Dispersalloy and Moderate amalgam samples. Every alloy seemed to be sensitive with changing of manipulative procedures. There was significantly more microleakage between that of the normal and those of the increased mercury to alloy ratios for all alloys tested (Table III). However, there was no significant difference in the amount of microleakage between normal and decreased mercury to alloy ratios for Moderate, Tytin and Dispersalloy. New True Dentalloy performed differently and showed a significant difference in microleakage between

TABLE IV
Marginal leakage as affected by trituration time

Alloy	Trituration Time (Sec)		
	Increase 30%	Normal	Decrease 30%
Moderate	22* (1)	50 (5)	49 (6)
Tytin	585 (85)	480 (50)	640 (89)
Dispersalloy	465 (81)	530 (49)	665 (112)
N.T. Dentalloy	1800 (210)	1450 (85)	980 (77)

* Mean values with standard deviations in parenthesis
— Not significant at P < .05

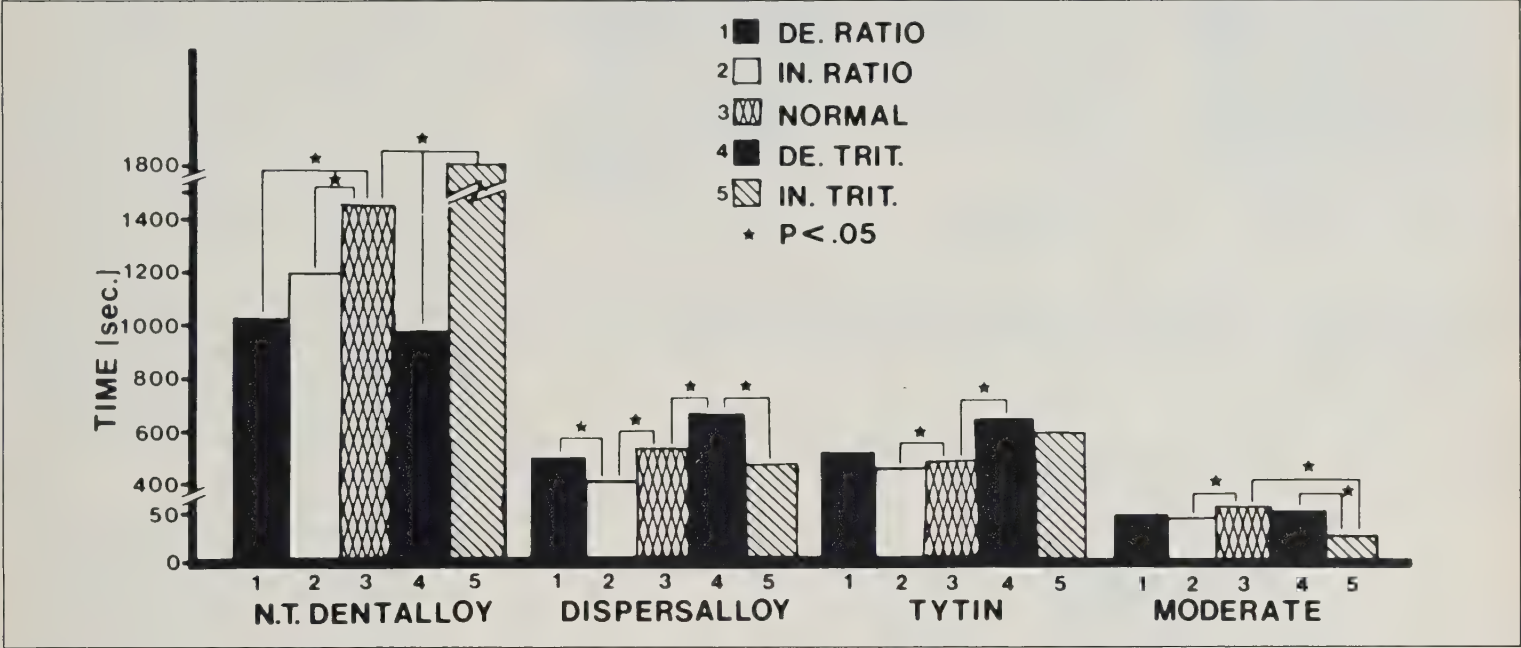


Fig. 2. Effect of mercury to alloy ratio and trituration time on microleakage after 24 hours. Microleakage of amalgam specimens made with normal mercury to alloy ratios and trituration time for each alloy is shown on condition 3. Conditions 1 and 2 represent microleakage of specimens made using decreased and increased mercury to alloy ratios. Conditions 4 and 5 represent microleakage of specimens made employing higher and lower trituration time. When the results were significantly different at 95 per cent confidence level, it was indicated by *.

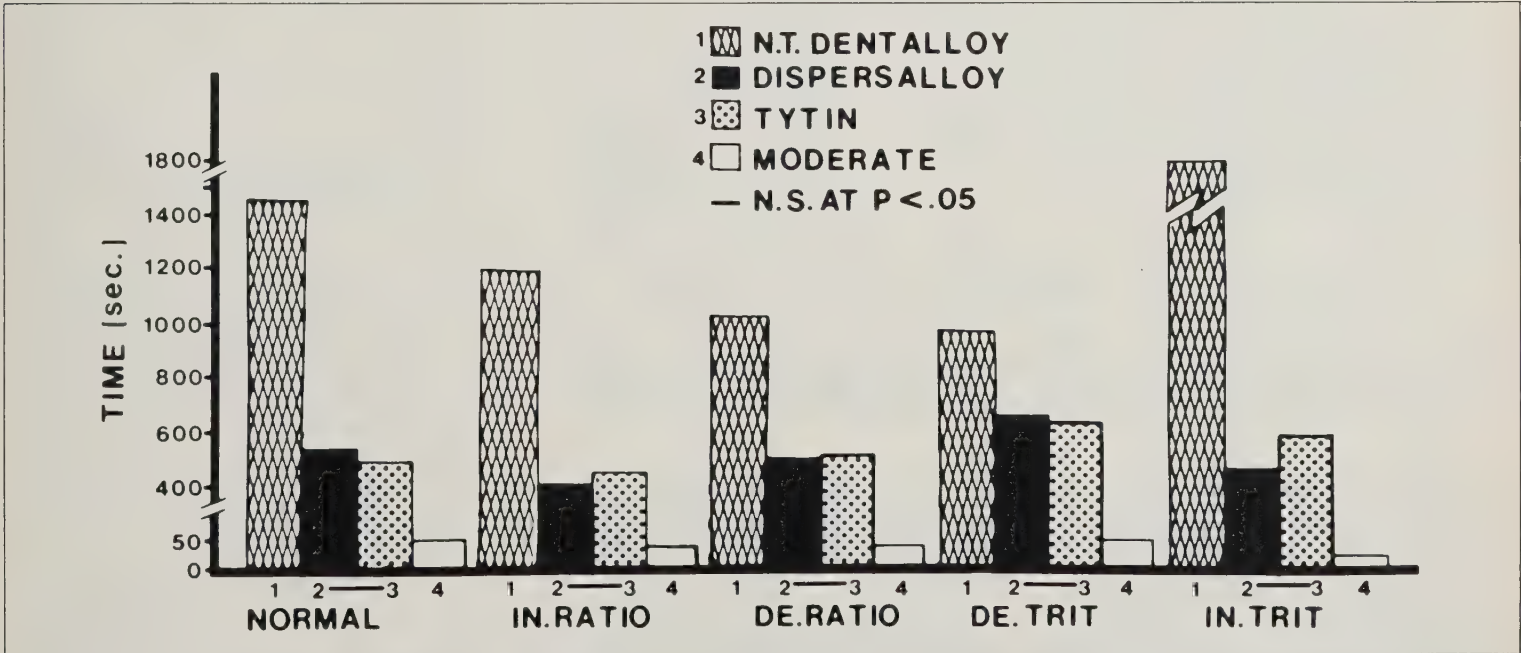


Fig. 3. Effect of mercury to alloy ratio and trituration time on microleakage after 24 hours for four different alloys. Line drawn under different alloys indicates no significant difference at 95 per cent confidence level.

MODERATE

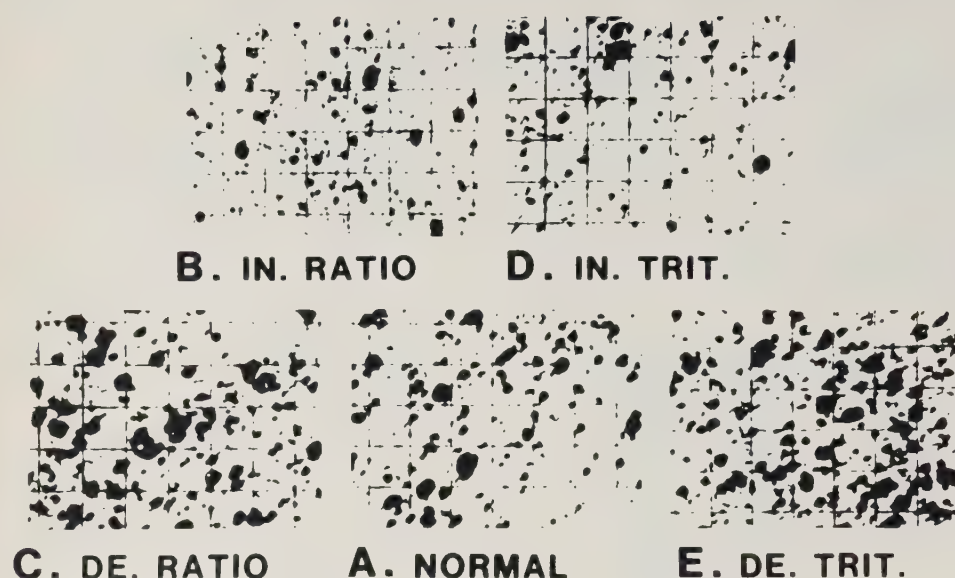


Fig. 4. Microporosities of Moderate amalgam specimens produced with different manipulative conditions: A – normal; B – increased mercury to alloy ratio; C – decreased mercury to alloy ratio; D – increased trituration time; E – decreased trituration time.

TYTIN

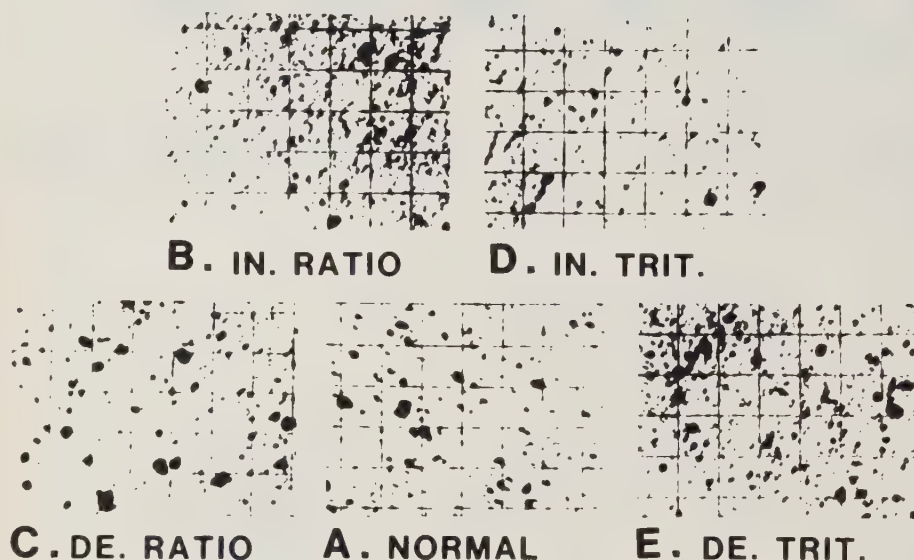


Fig. 5. Microporosities of Tytin amalgam specimens produced with different manipulative conditions: A – normal; B – increased mercury to alloy ratio; C – decreased mercury to alloy ratio; D – increased trituration time; E – decreased trituration time.

normal and decreased mercury to alloy ratio. Tytin showed less sensitivity to manipulative procedures than the other three alloys. New True Dentalloy, on the other hand, was highly influenced by changing manipulative procedures. The results of the Scheffe's multiple comparison test at the 95 per cent level of confi-

dence showed that there was no significance between Tytin and Dispersalloy in the degree of microleakage. In regard to the effect of the manipulative procedure on microleakage, the New True Dentalloy and Moderate showed the best and worst result, respectively. The only explanation must be that the microleakage of the den-

tal amalgam is governed by more than one structural factor.

The present study showed that all amalgam specimens, regardless of composition or particle shape, contained voids or microporosity (Figs. 4 and 7). All the alloys showed different amounts of microporosity in regard to manipulative variations. In general, porosity increased when either mercury to alloy ratio or trituration time was decreased compared to the recommended normal procedure. On the other hand the porosity decreased with either increasing mercury to alloy ratio or trituration time. The results of this study are in agreement with the earlier investigators.^{8,9} Microporosity can be attributed to incomplete wetting of amalgam powder with mercury during trituration and to inadequate condensation.⁵ Microporosities may also influence corrosion of amalgam^{5,12} which may penetrate through the δ^2 phase of the amalgam mass or through grain boundary of the δ^1 phase.^{5,13,14} As suggested by Jorgenson et al.,⁸ porosity in dental amalgam involves a significant reduction of strength of the alloy. Therefore, amalgam restorations with lesser amounts of porosity will have better physical properties.

No correlation was noted by comparing the observed amount of porosity from pictures to the quantified amount of microleakage. As can be seen in Tables III and IV, the least amount of microleakage was seen in New True Dentalloy, followed by Tytin, Dispersalloy and Moderate. However, Tytin and Dispersalloy had the least degree of microporosity compared to New True Dentalloy and Moderate (Figs. 4-7).

Summary

An air pressure technique was utilized to measure the degree of microleakage in Moderate, Tytin, Dispersalloy and New True Dentalloy amalgam after 24 hours. After the microleakage test, the same specimens were utilized to investigate the degree of microporosity and to determine if there was any correlation between these two. No correlation was observed between microleakage and degree of microporosity. In regard to microleakage the New True Dentalloy amalgam leaked less than the others. Increase or decrease in mercury to alloy ratio and trituration time did not significantly change the degree of microporosity in Tytin. The New True Dentalloy showed the highest sensitivity in regard to microleakage when the mercury to alloy ratio and trituration time increased or decreased and that of the Tytin was the least.

Conclusions

Microleakage of four commercial amalgam alloys was investigated *in vitro* by the air pressure technique. The amalgams investigated were tested after 24 hours with a special apparatus. After microleakage tests, the same samples were prepared for the metallographic observation. Under the condition of the present investigation, the following conclusions were made:

- The New True Dentalloy amalgam leaked less than the other three alloys tested.
- All the amalgams showed varying degrees of microleakage by changing manipulative procedures such as the mercury to alloy ratios (± 2 per cent) and the trituration time (± 30 per cent).
- In regard to microleakage, the New True Dentalloy demonstrated highest sensitivity with changing manipulative procedures and Tytin showed the least sensitivity.
- Amalgams tested showed higher degrees of microporosity when lower mercury to alloy ratio or less trituration time was employed.
- No correlation was observed between microleakage and microporosity of these alloys. Δ

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Reprint requests to Dr. Hadavi.

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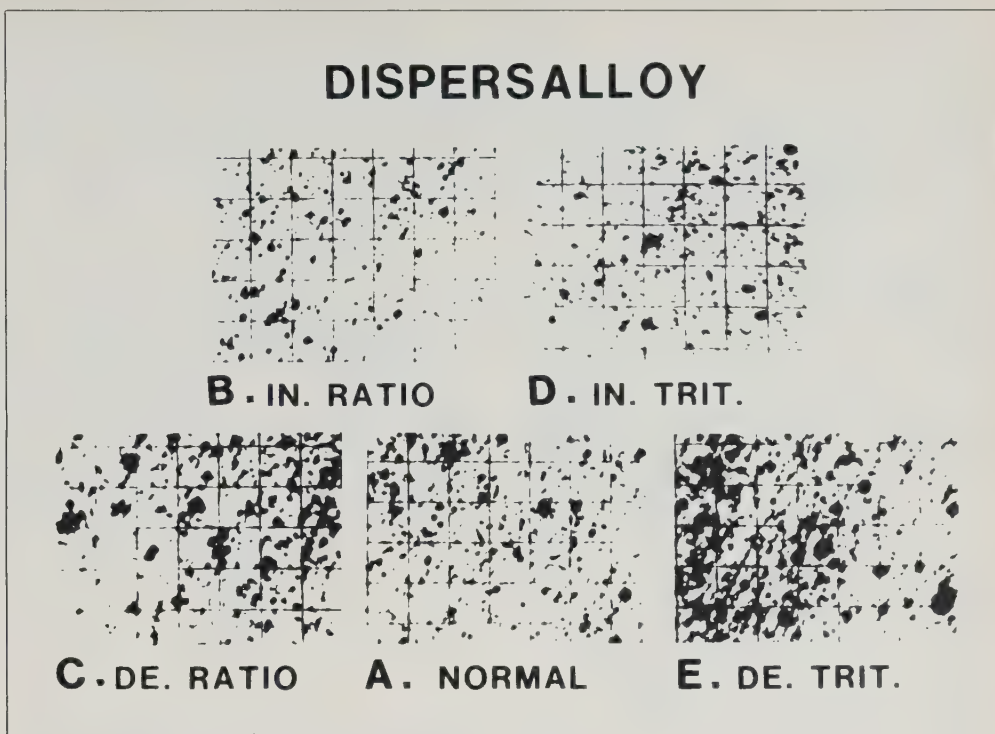


Fig. 6. Microporosities of Dispersalloy amalgam specimens produced with different manipulative conditions: A – normal; B – increased mercury to alloy ratio; C – decreased mercury to alloy ratio; D – increased trituration time; E – decreased trituration time.

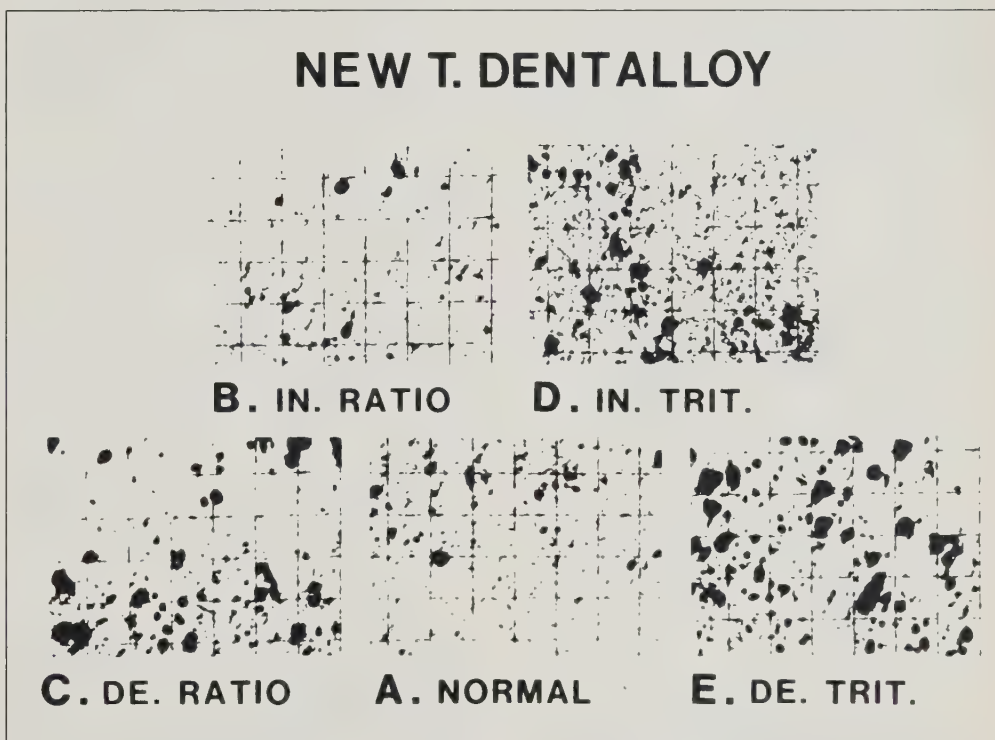


Fig. 7. Microporosities of New True Dentalloy amalgam specimens produced with different manipulative conditions: A – normal; B – increased mercury to alloy ratio; C – decreased mercury to alloy ratio; D – increased trituration time; E – decreased trituration time.

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LOCAL ANESTHETICS and SULPHITE SENSITIVITY

James W. Blackmore, BSc, MSc, DDS, BScD
Toronto

ABSTRACT

Allergic reactions to ingested and inhaled sulphites have come under scrutiny in the past 10 years. Presently, investigators are trying to determine if subcutaneous injection of sulphite can produce the same reactions, particularly in sulphite-sensitive asthmatics. Local anesthetics containing vasoconstrictor agents utilize sulphite as the anti-oxidant in their preservation. Recently it has been suggested that some adverse reactions to local anesthesia may actually be a response to the sulphite preservative.

SOMMAIRE

Au cours des dix dernières années, on a étudié les réactions allergiques aux sulfites ingérés ou inhalés. Actuellement, les chercheurs s'efforcent de déterminer si une injection sous-cutanée de sulfite peut susciter les mêmes réactions, en particulier chez les asthmatiques sensibles au sulfite. Les anesthésiques locaux contenant des agents vasoconstricteurs uti-

lisent du sulfite comme anti-oxydant pour leur conservation. Récemment, on a laissé entendre que certaines réactions contraires à l'anesthésie locale pourraient dépendre de l'agent conservateur au sulfite.

Local anesthetic mishaps are rare when these agents are administered in an appropriate dosage and in the appropriate anatomical location. However, reactions do occur, although only 1 per cent of these are thought to be immunologically mediated. Adverse drug reactions to local anesthetics can be classified as toxic responses in normal individuals, idiosyncratic reactions, allergic or immunologic, and those unrelated to the primary drug used, but caused by sympathetic stimulation, vaso-vagal reactions or psychomotor stimulation.¹

The signs and symptoms attributed to local anesthetic reactions include flushing, dyspnea, palpitations, hyperventilation, syncope, pruritis, urticaria, angioedema, nausea, vomiting, anxiety, seizure-like activity and rhinitis. These

are often attributed either to anxiety or to the effect of the vasoconstrictor (e.g., epinephrine) that is commonly present in these preparations.

Local anesthetic solutions also contain many ingredients that affect patients other than the active anesthetic agent and the vasoconstrictor component. These include antioxidants, preservatives, buffers and electrolytes, and can be as toxic or allergenic as the anesthetic agent. An excellent review was presented by Klein.²

One of the preservatives most commonly implicated in local anesthetic mishaps is methylparaben.³ However, another component of dental anesthetics that may warrant attention as an allergenic substance is the antioxidant. The antioxidant used in local anesthetic solutions is part of the class of agents commonly called sulphites.

Sulphite sensitivity has come under study only within the last 10 years, although the earliest report may date back to 1973.⁴ It is known that food and beverages have been the prime source of contact with sulphites. Recently, atten-

TABLE I

Sulfiting Agents: Equilibrium in Aqueous Solution

	$\frac{1}{2} \text{S}_2\text{O}_5^{2-}$	Metabisulfite	
		$\frac{1}{2} \text{H}_2\text{O}$	
		H^+	
SO_3^{2-} Sulfite	HSO_3^- Bisulfite		" H_2SO_3 " ($\text{SO}_2 + \text{H}_2\text{O}$) Sulfurous acid
		pH Temperature Ionic strength	

TABLE II

Partial List of Sulfites in Foods

Alcoholic beverages (beer, cocktail mix, red wine, white wine)
 Non-Alcoholic beverages (colas, fruit drinks)
 Baked goods (baking mixes, cookies, crackers, crepes, pie crust, pizza crust, soft pretzels, quiche crust, tortilla, waffles)
 Coffee and tea, including instant tea
 Condiments (olives, relishes, pickles, salad dressing mixes, wine vinegar)
 Confections (brown sugar, raw sugar, powdered sugar)
 Dairy analogs (filled milk)
 Fish products (clams, crab, dried cod, lobster, scallops, shrimp)
 Fresh fish (clams, crab, lobster, scallops, shrimp)
 Fresh fruit (fruit salads, grapes, other)
 Fresh vegetables (avocado salad, guacamole, cabbage, mushroom, salad bars, tomatoes)
 Gelatins/puddings/fillings (fruit filling, gelatin, pectin jelling agents)
 Grain products (batters, breadings, corn starch, food starches, noodle/rice mixes)
 Gravies/sauces (milk based gravy, others)
 Hard candy
 Commercial jam and jelly
 Nuts
 Protein isolates
 Processed fruits (dietetic fruit or juice, dried fruit, fruit juice, glazed fruit, juice)
 Processed vegetables (avocado mix, canned vegetables, dried vegetables, green vegetables, hominy, pickled vegetables, potatoes, spinach, vegetable juice)
 Snack foods (apple bits, dried fruit, filled crackers, tortilla chip, trail mix, potato chip)
 Soft candy (caramel, others)
 Soups (canned soups, dry soup mix)
 Sugar (white granulated)
 Sweet sauces (corn syrup, dextrose monohydrate, fruit topping, glucose syrup, maple syrup, molasses, pancake syrup)

tion has turned to medications that contain sulphites as an antioxidant.^{5,6} These enhance the shelf life of anesthetics by preventing breakdown of the vasoconstrictor in local anesthetics. Antioxidants are simple compounds (Table I) responsible for the bitter taste of many anesthetics, and, until recently, believed seldom associated with allergenicity.⁷

What are the sulphiting agents?

Potassium metabisulphite, the first substance implicated, is one of several

commonly used sulphiting agents which include sulfur dioxide and sodium- or potassium-sulphite, bisulphite or metabisulphite. When sulphite is placed in solution, particularly at acid pH (as in saliva or gastric juice), a warm temperature readily converts it to sulfurous acid and sulfur dioxide (Table I).

Sulphites are widely used in the food and beverage industry as sanitizing agents for food containers and fermentation equipment, as preservatives to reduce or prevent microbial spoilage of food, as selective inhibitors of undesirable

organisms during fermentation and as antioxidants and inhibitors of enzyme catalyzed oxidative discoloration. In other words, they delay or prevent undesirable changes in colour, flavour or texture, such as browning or discoloration due to oxidation.⁸

What foods contain sulphites?

The following is a partial list of foods and beverages likely to contain sulphites. For a more complete list, see Table II. Wine alone contains approximately 10 mg/oz.

- dried fruits and vegetables, fruit juices, frozen sliced apples and mushrooms
- beverages (alcoholic and non-alcoholic)
- glucose solids and syrup and dextrose (used in the manufacturing of confectionery)
- jam, jelly and marmalade
- molasses
- gelatin
- mincemeat
- pickles and relishes
- tomato paste, pulp, catsup, purée

How are sulphites regulated?

Since 1959, sulphites have been listed by the United States Food and Drug Agency as GRAS (Generally Recognized as Safe) for use in food. By January 1986, the FDA had received 850 complaints about sulphite reactions, 14 of them fatal. However, in July 1986, the FDA announced the ban of sulphite use on raw fruits and vegetables and a broadening of requirements for sulphite labelling on packaged foods.

Health and Welfare Canada requires that all packaged food other than alcoholic beverages must list sulphite agents on the label. Sulphites are no longer allowed in salad bars at restaurants as preservatives. Current food regulations permit a specified level of sulphites, calculated in parts per million to be added to certain foods.⁹

Not only are sulphites used in the food and beverage industry, but they are also used as antioxidants by the pharmaceutical industry. Reports of asthmatics sensitive to sulphites added to medications has been documented.⁵ Table III contains a partial list of medications that contain sulphites.

Who is sulphite-sensitive?

The typical sulphite-sensitive individual seems to be an adult asthmatic. No severely sulphite-sensitive asthmatic was aspirin sensitive, nor was an aspirin-sensitive asthmatic shown with a history of sulphite sensitivity. About 0.5 per cent of all individuals with asthma are allergic

to aspirin.¹⁰ None of the sulphite-sensitive asthmatics (non-aspirin sensitive asthmatics) have positive challenge to tartrazine (a yellow food dye – 50 mg) or to monosodium glutamate (a flavour enhancer – 2500 mg). None of the sulphite-sensitive asthmatics had food allergy.

The incidence of positive sulphite challenge in chronic asthmatics appears to be 5 to 10 per cent. A positive challenge is defined as a 20 per cent fall in FEV₁ (forced expiratory volume in one second), in a double blind, placebo-controlled test. In the United States where the asthmatic population is believed to be 10 million, there may be up to one million sulphite-sensitive asthmatics.

Furthermore, there exists a non-asthmatic, atopic, sulphite-sensitive population. This population represents 30 per cent of all cases. There is little known about the incidence of sulphite sensitivity in the pediatric population; however, reports of sensitivity in children exist.^{6,11}

Mechanisms

The mechanism of sulphite sensitivity is unknown and is likely multiple. It is well recognized that all asthmatics are hyperactive to inhaled sulfur dioxide and it is generally accepted that the overwhelming majority of reactions are secondary to the inhalation of sulfur dioxide. However, this does not explain reactions to parenterally administered sulphites in medications.

Another possible mechanism for at least a small minority of sulphite reactions, both asthmatic and non-asthmatic, is an IgE-mediated, immediate hypersensitivity. The antibodies involved in anaphylaxis and atopy are IgE antibodies. Atopy (hay fever, asthma and urticaria) occurs when an antigen reacts with its antibody which usually is fixed to a target tissue.

Sulphite oxidase deficiency provides a third mechanism. No elaboration on these mechanisms will be undertaken here, but an excellent review on sulphite sensitivity is provided.⁷

Reports of sulphite sensitivity and local anesthetics

Local anesthetics provide a source of subcutaneous sulphite. A report of bisulphite sensitivity manifesting as allergy to local dental anesthesia has been presented.¹² In this case, a 37-year-old white female reacted to the administration of local anesthetic with vasoconstrictor. She developed flush, warmth and pruritis,

TABLE III

Partial List of Sulfites in Medications

<i>Nebulized Bronchodilators</i>	<i>Anti-Emetics (Parenteral)</i>
isoetharine (Bronkosol)	metoclopramide (Reglan)
isoproterenol (Isuprel)	promethazine (Phenergan)
metaproterenol (Alupent, Metaprel)	prochlorperazine (Compazine)
<i>Cardiovascular Drugs (Parenteral)</i>	<i>Antibiotics (Aerosolized, Parenteral)</i>
dopamine	sulfonamides (Gantrisin, Bactrim, Sulfadiazine, Septra, Sulfacetamide)
epinephrine (Epipen Auto Injector, Anakit, etc)	tetracyclines
procainamide	aminoglycosides (tobramycin, kanamycin, gentamycin, streptomycin)
norepinephrine (Levophed)	
metaraminol (Aramine)	<i>IV Solutions</i>
isoproterenol	Isolyte, Aminosyn, Travamin, Amigen, Inpersol, Ionosol, Albadex, Inotropin, ascorbic acid, travert, freamine, hepatamine, parenteral nutrition, Travasol, etc
methoxamine (Vasoxyl)	<i>IV Contrast Solutions</i>
<i>Psychiatric Drugs (Parenteral)</i>	<i>Local Anesthetics</i>
chlorpromazine	Novocaine
prochlorperazine	Carbocaine
imipramine (Tofranil)	Nesacaine
perphenazine (Trilafon)	Mepivacaine
phenothiazines (Torecan)	Procaine
<i>Analgesics</i>	Maracaine
codeine	Pontocaine
morphine	Lidocaine
acetaminophen (Tylenol, etc)	Meracaine
pentazocine (Talwin)	<i>Muscle Relaxants (Parenteral)</i>
nalbuphine (Nubain)	Norflex
meperidine	Robaxin
oxymorphone (Numorphan)	Tubocurarine
<i>Peritoneal Dialysis Solutions</i>	<i>Miscellaneous</i>
Dialyte, Inperson, etc	Ergoloid
<i>Steroids, Parenteral</i>	B complex
betamethasone	tensilon
dexamethasone	sodium thiosulfate
prednisolone	
hydrocortisone	
<i>Miscellaneous</i>	
otic preparations	
ophthalmic preparations	
liver injections	
orphenadrine	

followed by scattered urticaria, dyspnea and a sense of anxiety. When later treated with lidocaine without vasoconstrictor, no reaction occurred and treatment was performed without incident.

Whether this represents a reaction to sulphite or a vaso-vagal reaction has been challenged.¹³ However, another case presented recently reported a 34-year-old female who developed difficulty breathing, rapid heart-rate and tightness in the chest on administration of local anaesthetics with vasoconstrictor. She exhibited none of these symptoms when administered the same local anaesthetic without vasoconstrictor. Since allergy to epinephrine is doubtful, it is believed that the antioxidant caused this reaction.¹⁴

Simon and Goldfarb¹⁵ were unable to provoke asthma in sulphite-sensitive asthmatic patients via the subcutaneous route. The dose administered was equivalent

to that found in aqueous epinephrine and common local anesthetics. However, these doses were below the provoking oral dose of sulphite sensitivity. Sulphite solutions are quite irritating to the skin and in concentrations of 10 mg/mL and greater produce intense local discomfort, thereby usually precluding the administration of larger doses of sulphite by the subcutaneous route. Subjects with oral provoking dosages greater than 10 mg failed to react to subcutaneous injection of sulphite of 10 mg or less.

In a few (three out of four, of the most sensitive patients (5 mg by oral dose), Stevenson and Simon¹⁶ were able to provoke asthma via the subcutaneous route (1 to 5 mg). Baker and Allen¹⁷ have reported that the intravenous injection of sulphites can cause severe and immediate asthmatic attacks in sensitive patients.

It is believed that mechanisms other than simply inhalation of sulfur dioxide

TABLE IV

Partial list of local anesthetics and antioxidant – 1983 (Contents listed per millilitre)

Anesthetic Agent		Vasoconstrictor	Antioxidant
Amides			
Lidocaine	Hcl 2%	None	None
Lidocaine	Hcl 2%		
Epinephrine	1/50,000	E 0.02 mg	SMB 0.5 mg
Lidocaine	Hcl 2%		
Epinephrine	1/100,000	E 0.01 mg	SMB 0.5 mg PB 0.15 mg
Mepivacaine	Hcl 3%	None	None
Carbocaine	Hcl 3%	None	None
Mepivacain	Hcl 2%		
Levonordefrin	1/20,000	L 0.05 mg	SMB 0.5 mg ASB 2 mg
Prilocaine	Hcl 4%	None	None
Prilocaine	Hcl 4%		
citanest forte		E 0.005 mg	SMB 0.5 mg
Bupivacaine	HCL 0.25%	None	None
Marcaine	Hcl 0.25%	None	None
Bupivacaine	Hcl 0.25%		
Epinephrine	1/200,000		
Marcaine	Hcl 0.25%	EB 0.0091 mg	SB 0.5 mg TG 0.001 mg AA 2 mg
Epinephrine	1/200,000		
Esters			
Novocaine	Hcl 2%	None	ASB 2 mg
Ravocaine	HCL 0.4%)		
Novocaine	Hcl 2%)	L 0.05 mg	ASB 2mg
Neo-Cobefrin	1/20,000)		
Pontocaine	Hcl 1%	None	ASB 2mg
Abbreviations			
AA	Ascorbic Acid	PB	Propylparaben
ASB	Acetone Sodium Bisulphite	SB	Sodium Bisulphite
E	Epinephrine	SMB	Sodium Metabisulphite
EB	Epinephrine Bitartrate	TG	Thioglycerol
L	Levonordefrin		

may be involved in some patients with sulphite-sensitive asthma.

Local anesthetics with vasoconstrictors contain upwards of 2 mg/mL of sulphite, while those without vasoconstrictors contain no sulphite (Table IV). Sulphite sensitivity could account for some of the adverse reactions attributed to local anesthetic agents or to the vasoconstrictor, epinephrine. However, until more definite data are available, patients who report a history of severe "allergy" to local anesthetic agents should be considered as potentially sulphite-sensitive.

Conclusion

A patient who presents with a history of allergy to local anesthetics may be sensitive to the antioxidant, not necessarily to the local anesthetic agent, the vasoconstrictor or the preservative, methylparaben. A patient who relates a history

of allergy or sensitivity to local anesthetics should be asked a detailed history of food allergy, particularly whether foods prepared at home or eaten out are the source of reaction, if a food allergy is suspect. A home-prepared meal may contain an average of upward of 2 to 3 mg of sulphite, whereas a restaurant-prepared meal can contain 25 to 200 mg, not including wine, of ingestible sulphites.¹² Also, a sensitivity to monosodium glutamate may be mistaken as the offending agent.

If the patient states that he is allergic to epinephrine, but has tolerated local anesthetics without vasoconstrictor, without incident, particularly if substituting with levonordefrin caused the same reaction, then sulphite sensitivity should be highly suspect.

The average sulphite-sensitive asthmatic has a minimal oral provoking dose of 10 mg of sulphite. Only the most sen-

sitive, steroid-dependent asthmatics react to less. A carpule of dental anesthetic can contain upwards of 3.6 mg of sulphite. This 10 mg dose can be exceeded with less than three carpules of some local anesthetics.

Any practitioner who administers local anesthetics with vasoconstrictor should be aware that sulphites are present in the solution as an antioxidant. Although the mechanism of sulphite sensitivity is unknown, it should be considered as a probable cause of side effect to local anesthetics. Δ

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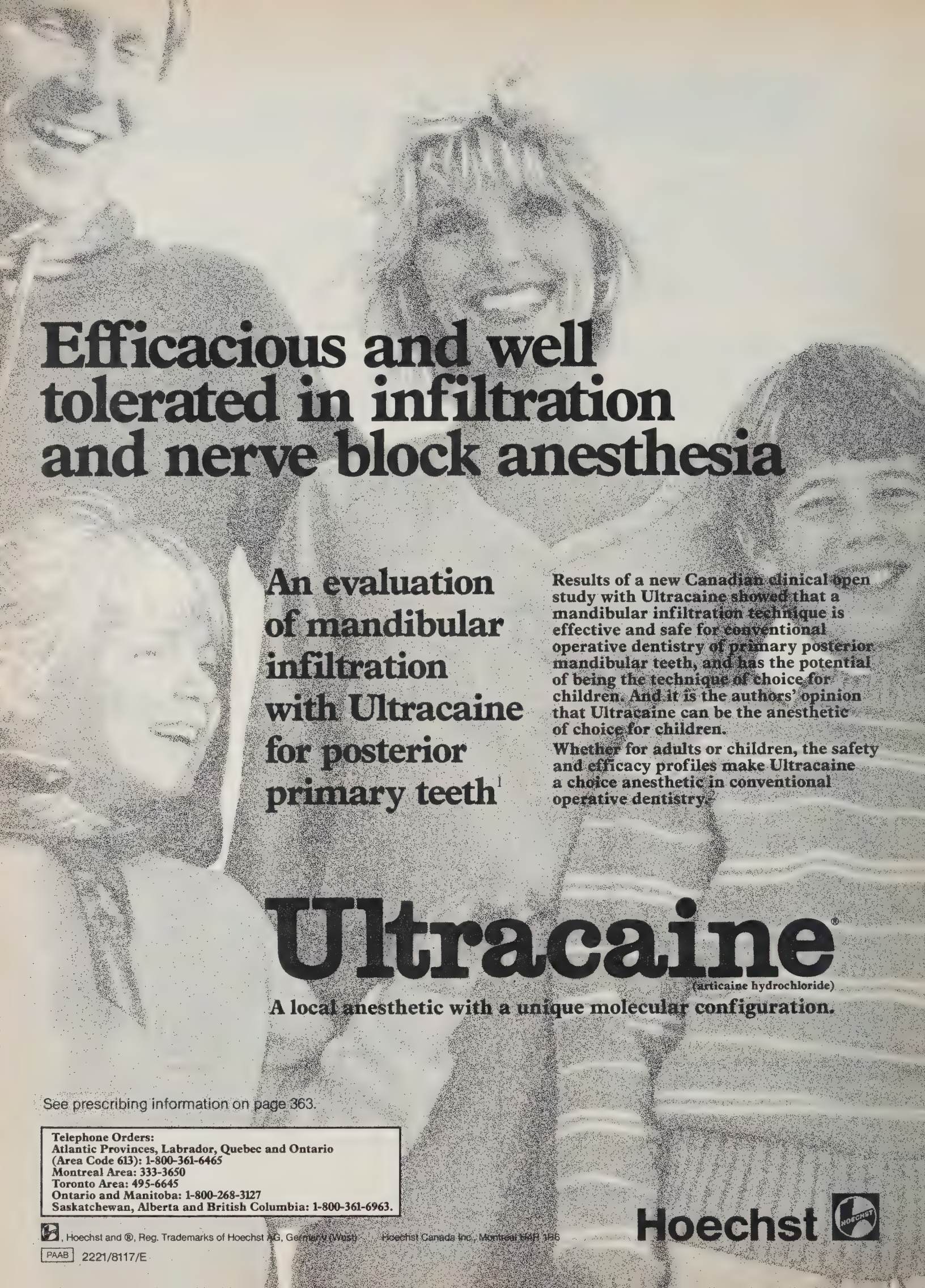
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Report on

PROSTHETIC JOINTS, ANTIBIOTIC PROPHYLAXIS AND DENTAL TREATMENT

J. Hardie, BDS, MSc, FRCD(C)
Ottawa

INTRODUCTION

Recent articles in this journal^{1,2} and the medical literature^{3,4} have described the current recommendations for the administration of antibiotic prophylaxis to cardiac patients receiving dental treatment. These reports emphasize the precautions to be adopted for patients with a history of infective endocarditis, valvular disease and prosthetic valves. In 1978, it was estimated that 80,000 total hip replacements were performed annually in the United States.⁵ It may be assumed that a proportionate number per population were performed in Canada. To date, there have been no authoritative recommendations regarding the prophylactic antibiotic procedures (if any) to be adopted when patients with prosthetic joints present for dental treatment.

This report presents a brief review of the current literature on this subject and offers some suggestions as to the establishment of appropriate Canadian guidelines.

AVANT-PROPOS

Dans des articles parus récemment dans ce journal^{1,2} et d'autres publications,^{3,4} on donnait les recommandations actuelles touchant l'administration d'antibiotiques comme agent prophylactique aux patients qui ont des problèmes cardiaques et qui doivent recevoir des traitements dentaires. Ces rapports insistaient sur les précautions à prendre avec les patients qui ont déjà eu une endocardite infectieuse ou une valvulopathie et qui ont des valves prothétiques. En 1978, on a estimé qu'il s'effectuait chaque année aux États-Unis 80.000 remplacements complets des hanches.⁵ On peut assumer qu'il s'en effectue proportionnellement autant au Canada. Jusqu'à maintenant, il n'y a pas eu des recommandations de source autorisée touchant les antibiotiques à donner par mesure de précaution aux patients qui ont des hanches prothétiques et qui se présentent chez le dentiste pour des traitements.

Cet article présente un bref aperçu des

publications parues sur le sujet et offre des suggestions pour formuler des directives appropriées à l'intention des dentistes canadiens.

Review

In 1985, Howell and Green⁶ and Jasper and Little⁷ independently reported on the status of antibiotic prophylaxis for dental patients with prosthetic joints as perceived by approximately 700 orthopedic surgeons responding to pertinent questions. These two articles are mandatory reading for dentists interested in this subject. The following lists some of the relevant background information from both papers.

- Approximately 0.3 per cent of all total hip prostheses become infected by haematogenous infections spread from distant sites.
- Mortality rates of 18 per cent have been reported for patients with haematogenous infections of total hip replacements.

- Clinical and animal studies have demonstrated that early and late infections may be due to:
 - i. contamination of the operative site during surgery
 - ii. hematogenous seeding from a distant acute or chronic infection
 - iii. transient bacteremias from genitourinary tract manipulations or dental treatment.
- Isolated reports suggest a relationship between infected prosthetic joints and the treatment of acute dental infections.
- Few documented cases exist that are attributable directly to dentally induced transient bacteremias, but a potential does exist.
- The environment of a well-healed, stable joint prosthesis certainly appears to be less hospitable and susceptible to the seeding of bacteria than a damaged heart valve or valve prosthesis.
- Most of the hematogenously seeded infections of prosthetic joints have been due to *Staph. aureus* or *Staph. albus*.
- Transient bacteremias that occur after dental treatment primarily are streptococcal.
- Penicillin is the antibiotic considered to be most effective against oral organisms.
- Broad spectrum antistaphylococcal drugs such as cephalosporin may be ineffective against streptococcal bacteremias of oral origin.

The two papers^{6,7} offer an analysis of the sets of questions given to the orthopedic surgeons. The following is a compilation of some of the responses.

- One study⁶ had a 60 per cent response to the questionnaire, while the other⁷ had a 38.6 per cent return rate. This suggests a certain ambivalence on the part of orthopedic surgeons as to the significance of prophylactic chemotherapy for dental patients with prosthetic joints.
- In Howell's study,⁶ 94 per cent of the respondents believed that dental infections affect joint prostheses. On the contrary, in Jasper's investigation,⁷ only 41 per cent of the surgeons stated that such a relationship was well established and important.
- Although the above responses suggest contradictions, the majority of surgeons (90 per cent) would recommend the use of prophylactic antibiotics prior to dental treatment even if they did not believe that a dental bacteremia was of pathogenic significance.
- The majority of orthopedic surgeons favoured a cephalosporin as a suitable prophylactic antibiotic against dental bacteremias.
- In Jasper's report, the respondents suggested starting the antibiotic one to

three hours before the dental appointment and continuing for two to three days after dental treatment. This is similar to the 1977 American Heart Association (AHA) recommendations. The surgeons in Howell and Green's study⁶ followed a schedule similar to the current 1984 AHA suggestions for the prevention of endocarditis. They recommended 1 g of a first generation cephalosporin two hours before the procedure and 500 mg six hours after treatment. A similar dose of erythromycin is suggested for patients who are allergic to cephalosporin.

In their conclusions, these authors make some recommendations. Howell and Green suggest that prophylactic antibiotics (cephalosporins) be given to all patients with major prosthetic joint replacement, and probably to those with minor joint prostheses, although they seem to be at less risk. Jasper and Little state that "the need for prophylactic antibiotic coverage before dental treatment to prevent late prosthetic joint infection has not been established." This paper⁷ concludes by recommending that dentists treating patients with prosthetic joints should consult and follow the recommendations of the attending orthopedic surgeon regarding antibiotic prophylaxis. Both studies agree that conflicting opinions exist, that research is required and that joint communiques should be issued by orthopedic surgeons and dentists.

Comments

It is interesting that these two recent studies conducted in the same manner should produce similar and conflicting observations and recommendations.

If antibiotic prophylaxis is required, it would appear prudent to use penicillin rather than cephalosporin against oral organisms. Since transient bacteremias last for 10 to 30 minutes, an initial high loading dose of penicillin followed by a smaller dose 6 hours later would be a reasonable schedule. Antibiotic prophylaxis may only be required when treating an acute oral or dental infection. This raises the issue of justification for antibiotic prophylaxis.

Recent papers⁸⁻¹⁰ in the dental literature have expressed concerns regarding the almost complete reliance upon antibiotics to prevent infective endocarditis (IE), without due attention to the risk factor involved or the efficacy of the drug regimen. Pallasch⁸ believes that "the risk of death from preventive treatment (penicillin) may be greater than the risk of death from the disease (infective endocarditis)." He also states that the risk of

bacteremia is 1,000 times greater from normal bodily functions (mastication, tooth brushing and defecation) than from dental treatment. This means that the odds are 1,000 to 1 — in litigation relative to infective endocarditis — that the bacteremia was induced by the patient rather than by the dentist.⁸ These arguments suggest that it is even more unlikely that a prosthetic joint would become infected by dental treatment. Tzukert et al⁹ employ a probabilistic model analysis of the AHA recommendations to show that antibiotic prophylaxis is of doubtful efficacy in patients at negligible, low, and even moderate risk of susceptibility to IE. They further state that when antibiotics are given, the oral route should be employed. In their second paper,¹⁰ they describe how clinical judgement of oral health combined with preventive programs may eliminate, in all but high risk for IE patients, the need for prophylactic antibiotics. If these principles are applied to patients with prosthetic joints, it would appear unlikely that the majority of such patients would require prophylactic antibiotics for dental treatment.

It would be prudent for cardiologists, cardiac surgeons and orthopedic surgeons to refer all patients who are scheduled for elective cardiac or joint prosthetic surgery, for a complete oral assessment prior to surgery. The attending dentist should remove all foci of oral infection and promote an acceptable standard of continuing oral hygiene.

Recently, several other investigators have studied the dilemma of antibiotic prophylaxis for artificial joint patients. Norden,¹¹ Ainscow and Denham¹² and Jacobson et al.¹³ are of the opinion that there is at present no scientific justification for the routine administration of prophylactic antibiotics in prosthetic joint patients exposed to a transient bacteremia from dental, gastrointestinal or genitourinary manipulations. They do suggest that a chronic bacteremia in a medically compromised patient, e.g., delayed healing after extractions in a diabetic mellitus or rheumatoid arthritic patient, would warrant appropriate antibiotic therapy. This appears to be a logical solution. It implies that antibiotics are not prescribed on a routine basis, but only after due consideration to the duration of any possible bacteremia and an appreciation of any medical conditions which may lower patient resistance to infections.

Summary

There are no authoritative recommendations regarding antibiotic prophylaxis

for dental patients with prosthetic joints. Reported suggestions are conflicting and may contravene established knowledge regarding the pathogenicity of transient bacteremias of dental origin.

Recommendations

There is an obvious requirement for academic or organized dentistry to initiate an investigation into the efficacy of antibiotic prophylaxis for patients with prosthetic joints. It would be necessary to have expert opinions on the susceptibility of prosthetic joints to hematogenous infections. Detailed information would be mandatory on the microbiologic flora and pathogenicity of dentally induced bacteremias. The effect of various drug regimens and their side-effects should be established. The clinical judgement of orthopedic surgeons and dentists should be sought.

Such an amalgamation of knowledge may produce informed authoritative recommendations. This would ease the frustration and concerns of the general

practitioner wishing to perform simple restorations and periodontal surgery on a 70-year-old woman who has no significant medical history apart from a total hip replacement of one year's duration. Δ

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Reprint requests to Dr. Hardie.

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Treatment of the partially edentulous maxillary arch assisted by **OSSEOINTEGRATED IMPLANTS & MAGNETS**

P.A. Watson, DDS, MScD

A. Brown, DDS, FRCD(C)

J.A. Symington, BDS, MSc, PhD, FDSRCS (Eng)
Toronto

* Companion paper to "Treatment of the edentulous maxillary arch using osseointegrated implants supporting a fixed-removable prosthesis" which appeared in JCD Vol. 54, No. 2, 1988, pp. 119-121.

INTRODUCTION

Clinical evaluations extending over many years, using the titanium fixture developed by Bränemark et al,¹ support the use of this implant for long-term tooth replacement. Replication studies have shown similar favorable results.² Although the primary application has been in the fully edentulous arch, other applications have been reported for the partially edentulous.³⁻⁵

Gillings^{6,7} reported the successful application of closed field cobalt-samarium magnets for tooth root overdenture retention. The split pole design of these attachments is reported to eliminate external magnetic fields and provide a retentive force of 250 gm for each unit. Jackson⁸ has reported several innovative applications of magnetic retention for implant supported overdenture treatment.

This report describes the use of the osseointegrated implants and magnetic retention as an adjunct in the prosthodontic rehabilitation of a partially edentulous maxilla.

AVANT-PROPOS

S'étendant sur de nombreuses années, les évaluations cliniques portant sur le dispositif au titane mis au point par Bränemark et al démontrent que cet implant pour le remplacement permanent des dents est efficace. Des études similaires ont donné des résultats tout aussi favorables. Bien que cette technique serve principalement pour des personnes complètement édentées, on a signalé des cas où on s'en est servi pour des personnes partiellement édentées.

Gillings rapporte qu'il s'est servi avec succès d'aimants de samarium-cobalt en champ clos pour la rétention d'une prothèse amovible à attachements radiculaires. Comme ces attachements comprennent deux pôles, ils éliminent les champs magnétiques externes et procurent une force de rétention de 250 gm l'unité. Jackson fait état de plusieurs façons originales d'utiliser la force de rétention magnétique pour les prothèses s'appuyant sur des implants.

Dans cet article, il est question d'im-

plants intégrés à l'os et de rétention magnétique en complément pour la reconstruction prothétique du maxillaire supérieur chez les édentés partiels.

The patient, a 30-year-old woman, had lost all her maxillary teeth except for the left canine, second premolar, first and second molars and the right second molar because of injury which compromised the blood supply to the maxilla. As well as loss of the teeth, there was severe resorption of alveolar bone in the premaxillary area and some loss of bone on the remaining teeth, particularly the canine. These conditions prevented the successful use of a conventional removable partial denture.

In this treatment, three implants* were placed in the maxilla. These were used to retain a cast gold bar that contained two stainless steel keeper plates matching with two magnetic units secured within the acrylic of a removable partial denture (Figs. 1 and 2). A fixed bridge was used on the left to enhance stability of the remaining teeth on that side. A retention



Fig. 1. Anterior view of gold bar attached to the implants.



Fig. 2. Anterior view of completed prosthetic treatment.

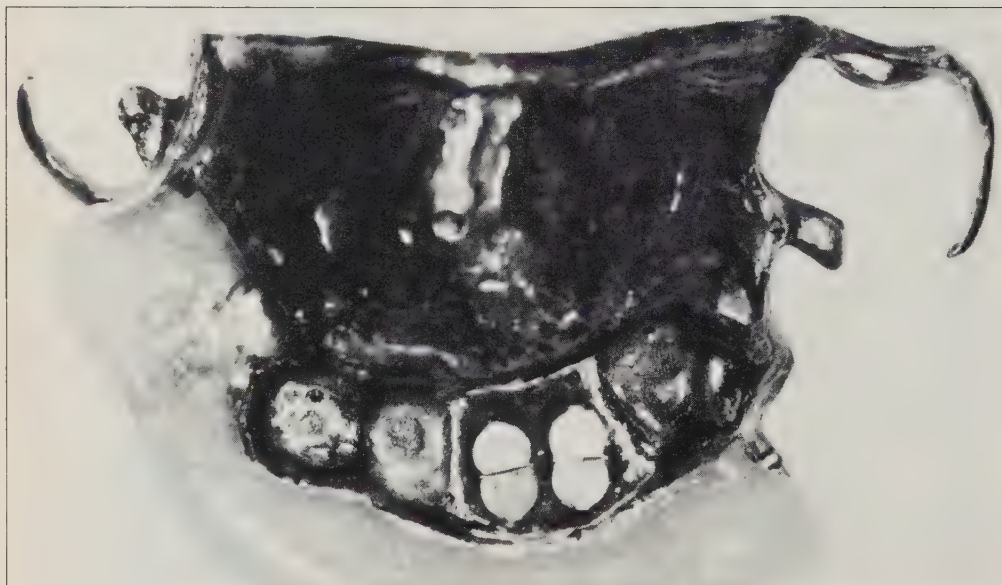


Fig. 3. Tissue surface of partial denture containing two Gillings split pole magnets.

attachment designed with a spring loaded plunger was coupled with a depression in the mesial of the canine as added precaution against downward displacement of the anterior end of the removable denture. ** With the partial denture in place, the magnetic units were attached with autopolymerizing acrylic through channels left in the acrylic and framework of the partial denture (Fig. 3).

This design allows horizontal movement of the partial denture within the range of functional movements permitted by the periodontal support of the remaining teeth. A rigid attachment between the implants and the partial denture would be contraindicated because of possible severe forces on the implants. The implants provide support during mastication and excellent resistance, through the magnets[†], against the loss of retention despite the very thick labial acrylic flange required for lip support. When the partial denture is removed, there is good exposure of the implant abutments for cleansing and maintaining tissue health. Δ

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† H.A. Worth Co., 925 Fairmile, West Vancouver, B.C.

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The p-hydroxybenzoic acid methyl ester contained in **Ultracaine**, as a preservative, has a hydroxy group in the para-position. This fact should be borne in mind in the case of patients with para-group allergy.

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Reactions to **Ultracaine** are characteristic of those associated with amide-type local anesthetics. A major cause of adverse reactions to this group of drugs is excessive plasma levels, which may be due to overdosage, inadvertent intravascular injection, or slow metabolic degradation. Other causes of reactions to these local anesthetics may be hypersensitivity, idiosyncrasy, or diminished tolerance.

Dosage and Administration

As with all local anesthetics, the dosage varies and depends upon the area to be anesthetized, the vascularity of the tissues, the number of neuronal segments to be blocked, individual tolerance and the technique of anesthesia. The lowest dosage, needed to provide effective anesthesia should be administered.

	Infil- tration	Nerve Block	Oral Surgery
Ultracaine	0.5-2.5	0.5-3.4	1.0-5.1
DS forte	mL	mL	mL
Ultracaine	0.5-2.5	0.5-3.4	1.0-5.1
DS	mL	mL	mL

It is recommended not to exceed 7 mg/kg body weight in adults.

To date, **Ultracaine** has not been administered to children under 4 years of age, nor in doses greater than 5 mg/kg in children between the ages of 4 and 12.

Supply

Ultracaine D-S: 4% with epinephrine (1/200,000) and **Ultracaine D-S forte**: 4% with epinephrine (1/100,000) are available in 1.7 mL cartridges, box of 50 cartridges.

Product Monograph available on request.

References:

1. Dudkiewicz A, Schwartz S, Laliberté R: Effectiveness of Mandibular Infiltration in Children Using the Local Anesthetic Ultracaine®. *Canadian Dental Association Journal* 1987; Vol 53 (No. 1): 29-31.
2. Lemay H et al: Ultracaine in conventional operative dentistry. *Journal of the Canadian Dental Association* 1984; 50 (No. 9): 703-708.

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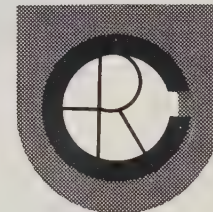
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Further information and application forms can be obtained from:

The Director

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#350 - 2194 Health Sciences Mall
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Closing date for receipt of fully documented applications is October 1 for admission the following summer.



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Announcements

May/Mai 1988

May 29-June 2, Les journées dentaires du Québec 1988, Montreal Convention Centre — Palais des congrès. Conjoint Convention with the International Association of Gerodontology. Contact: Dr. Michel Jahjah, (514) 875-8511.

May 30-June 2: Third International Congress of Gerodontology at the Palais des Congrès in Montréal, Québec sponsored by the Order of Dentists of Québec and the International Association of Gerodontology. For information, contact: Dr. Roland Vallée, École de Médecine dentaire, Université Laval, Ste-Foy (Québec) G1K 7P4.

June/Juin 1988

June 1-8: American Dental Hygienists' Association at the Westin Hotel in Seattle, Washington. For more information, contact: Ms. Anne Kaczmarek, 444 N Michigan Ave., Suite 3400, Chicago, IL 60611 (312) 440-8900.

June 2-5: Annual Saskatchewan Dental Convention at Heritage Inn, Moose Jaw. Featured Speaker Dr. Burt Press. Featured Events — 1st ever Dental Olympics, Thrill of a Lifetime Auction, Mystery Dinner Theatre, etc. All staff welcome to speaker and events. For information contact: Dr. P. Beesley, 101 - 54 Ominica St W, Moose Jaw, Sask S6H 1W9 (306) 693-0755 or Dr. M. Barker, 310 - 31 Main St N, Moose Jaw, Sask S6H 3K1 (306) 692-6438.

June 2-5: 88th Annual Conference of the Canadian Lung Association at Hotel Newfoundland, St. John's, Newfoundland. For information, contact: A.

Les McDonald, Director, Health Education and Program Services, Canadian Lung Association, 75 Albert St., Suite 908, Ottawa, Ont. K1P 5E7 or tel. (613) 237-1208.

June 3-4: Operative Dentistry at the College of Dental Medicine, Medical University of South Carolina. For information, contact: Dr. Gordan Stine, Director, Dental Continuing Education, Medical University of South Carolina, 171 Ashley Ave., Charleston, S.C. 29425-2601.

June 3-5: 1988 Canadian Academy of Periodontology Annual Meeting, Pan Pacific Hotel, Vancouver, B.C. Speakers: Dr. Jan Lindhe: Current Concepts of the Etiology and Pathogenesis of Periodontal Disease. Dr. Stan Sapkos: The Role of the Periodontist in Implant Therapy. Contact: Dr. K. McNulty, #304-126 East 15th St., North Vancouver, B.C. V7L 2P9. (604) 980-5822.

June 6-10: Second Scientific Congress of the University of Ankara Faculty of Dentistry in Ankara Turkey. For details: Prof. Dr. Ali Zaimoglu, A.U. Dis Hekimligi Fakültesi, Besevler, Ankara, Turkey.

June 7-10: Canadian Hospital Association 1988 Annual Conference at the Winnipeg Convention Centre in Winnipeg, Manitoba. For more information, please contact: Education Department, Canadian Hospital Association, Suite 100, 17 York St, Ottawa, Ont K1N 9J6. Tel. (613) 238-8005.

June 8-13: Hong Kong Dental Association/China Medical Association Joint Dental Symposium in Beijing, People's Republic of China. For details, contact: Mrs. Yvonne Ng, Executive Secretary, Hong Kong Dental Association, Duke of Windsor Social Service Building, 8/F, 15 Hennessy Road, Hong Kong. Tel: 5-285327.

June 9-11: Society for Oral Oncology will hold its annual meeting at the Meridien Hotel in Vancouver, British Columbia. Information concerning accommodation, scientific and social programmes can be obtained from the local arrangements chairman: Dr. P. Stevenson-Moore, Cancer Control Agency of BC, 600 West 20th Ave., Vancouver, BC V5Z 4E6.

June 9-11: Annual Congress of the Swiss Dental Association. For information contact: Dr. Olivier von der Muhll, rue Langallerie 1, 1003 Lausanne, Switzerland.

June 10-12: Alaska Dental Association meeting at the Hotel Halsingland in Haines AL. For more information, contact: Ms. Martha A. Dearborn, 3400 Spenard Rd, Suite 10, Anchorage, AL 99503 U.S.A. (907) 277-4675.

June 13-15: Dental Implants Consensus Development Conference in Bethesda, Maryland sponsored by the National Institute of Dental Research, the Food and Drug Administration and the NIH Office of Medical Applications of Research. To register, contact: Conference Registrar, Prospect Associates, Suite 500, 1801 Rockville Pike, Rockville, Maryland 20852. (301) 468-MEET.

June 15-19: Dental Laboratory Conference at the Denfey Hyannis Hotel in Cape Cod, Maine. For details, please contact: Mr. Robert Gitman, 1918 Pine St., Philadelphia, PA 19103 U.S.A. (215) 546-2313.

June 16-18: 1988 Convention of the College of Dental Surgeons of British Columbia at the Vancouver Trade and Convention Centre. Topics cover Practice Management to Practical Periodontology. For further information, contact: College of Dental Surgeons of BC, 1125 West 8th Ave., Vancouver, B.C. V6H 3N4 or phone: (604) 736-3621.

June 21-24: 53rd Annual Meeting of the Pacific Coast Society of Prosthodontists in Sun River, Oregon. For more information, contact: Dr. Richard Frank, Prosthodontics SM-52, University of Washington, Seattle, Washington 98195 U.S.A.

June 22-23: Sports Dentistry Symposium in Toronto presented by the Academy of Sports Dentistry and the Department of Continuing Education, Faculty of Dentistry, University of Toronto. Contact: Jennifer White or Mai Pohlak, Faculty of Dentistry, University of Toronto, 124 Edward St., Toronto, Ontario, M5G 1G6 or phone (416) 979-4503.

June 25-July 2: Bermuda Dental Association Convention (School is out!) Limited attendance convention. For pre-registration, group travel accommodation and family rates, contact: Dr. Bob Brandon, 85 Lonsdale Dr., London, Ontario N6G 1T4 or phone (519) 657-3368.

June 25-July 4: Yukon Dental Association Summer '88 Continuing Education Program. Two days of clinical presentations to be followed by a week long canoe trip on the Klondike Trail of 1898 down the Yukon River to Dawson City. For details, write: Dr. John Stern, Suite 4, 3089 3rd Ave., Whitehorse, Yukon Y1A 5B3. *Please note: Dates appearing in the January and February issues were incorrect.*

June 26-30: Second World Dental Conference in Jerusalem, Israel. Details from: The Secretariat, Second World Dental Conference, P.O. Box 50006, Tel Aviv 61500, Israel.

June 28-July 1: 94th Annual Meeting of the American Dental Society of Europe in Porto Carras, Greece. Details from: Dr. C.R. Debenham, 1 Harley St., London W1N 1DA, England.

July/Juillet 1988

July 1-3: British Dental Association's Annual Conference, Harrogate International Conference Centre, Harrogate, Yorkshire (UK). "Facing the Future" Contact: Linda Bridges, Conference Office, 64 Wimpole St., London, England. W1M 8AL.

July 1-3: Florida National Dental Congress sponsored by the Florida Dental Association will be held at the Marriott's Orlando World Center, Orlando, FL. For more information, contact: Betty Waggener, Director, Florida National Dental Congress, 3021 Swann Ave., Tampa, FL 33609 U.S.A. Tel: (813) 877-7597.

July 4-5: 41st Scandinavian Dental Congress. For details, write: Icelandic Dental Association, P.O. Box 8596, 128 Reykjavik, Iceland.

July 7-10: Annual Congress of the European Organization for Caries Research in Angers, France. For details, contact: Prof. RZM Triller, Université René Descartes, Faculté de Chirurgie dentaire, 1 rue Maurice Arnoux, 92120 Montrouge France.

July 15-20: Academy of General Dentistry at the Hyatt Regency in Chicago, Illinois. For registration information, contact: Ms. Debbie Jepsen, 211E Chicago Ave., Chicago, IL 60611 (312) 440-4300.

July 25-28: 4th International Symposium on Performance Logic and Performance Simulation Training in Dentistry: Balance in Practice at the University of British Columbia, Faculty of Dentistry in Vancouver. Speakers from the United States, Canada, South America and Asia. For information, contact: Dr. Lance Rucker, Coordinator, Performance Simulation Laboratory, The University of British Columbia Telephone (604) 228-4663.

August/Août 1988

August: University of Alberta graduates wishing to have a class reunion during the **CDA Convention** please contact Sandra Kerluik at the U of A Alumni Office (403) 432-3224 if you require assistance in organizing your reunion mailing. For assistance in function space, please contact Florence Ingham at 432-3066.

August 5-6: International Congress of Laser in Dentistry at the Tokyo Prince Hotel in Japan, sponsored by the Japan Society for Laser Medicine. For further information, contact: Secretariat of

I.C.L.D. 1988, c/o International Congress Service, Inc, Kasho Building 2F, 2-14-9 Nihombashi, Chuo-ku, Tokyo 103, Japan.

August 5-7: Singapore International Dental Exhibition and Conference Dentistry's Challenges, AD 2000 and Beyond. For more information, contact: SIDEC 88, Orchard Dental Centre Pte Ltd, 268 Orchard Rd, #05-07, Yen San Building, Singapore 0923.

August 7-11: American Association of Hospital Dentists at the Hershey Hotel in Philadelphia, Pennsylvania. For information, please contact: Dr. Manuel M. Album, 491 N York Rd, Jenkintown, PA 19046 U.S.A. (215) 887-3838.

August 7-11: Ninth Congress of the International Association of Dentistry for the Handicapped, Philadelphia, PA. Contact: Public Relations, (215) 576-2303, Abington Memorial Hospital, Abington, PA. 19001.

August 7-11: American Society for Geriatric Dentistry at the Hershey Hotel in Philadelphia, Pennsylvania. For information, contact: Dr. Manuel M. Album, 491 N York Rd, Jenkintown, PA 19046 U.S.A. (215) 887-3838.

August 8-10: 14th Annual Health Administration Forum at the Royal Ottawa Hospital in Ottawa. For more information, contact: Jahaangir Bulsara, Program in Health Administration, Room 255F, Vanier Hall, University of Ottawa, Ottawa, Ont. K1N 6N5 (613) 564-7017.

August 8-13: Preventive Dentistry and Epidemiology 1st International Conference sponsored by the Dental Health Center of Karlstad Sweden together with a Course on "Table clinics and demonstrations of preventive materials, programs and methods". For more information, contact: The Preventive Dental Health Center, c/o Hjärnbruket, Box 9055, S-650 09 KARLSTAD, Sweden. Tel: 46 054-13 20 10.

August 12-14: 4th Annual A.C.O.I. Symposium sponsored by the American College of Oral Implantology and the International Congress of Oral Implantologists in Denver, Colorado. For further detail, contact: Margaret M. Jackson, Executive Director, I.C.O.I., 248 Lorraine Ave., 3rd floor, Upper Montclair, N.J. 07043 U.S.A.

August 13-14: 4th Annual ACOI Symposium: Implant Prosthodontics at the Park Suite Hotel in Nashville, Tennessee sponsored by the American College of Oral Implantology and the International Congress of Oral Implantologists. For information, contact: Margaret Jackson at (201) 783-6300.

August 19-21: 40th Annual Scientific Meeting of the Canadian Association of Orthodontists at the Fantasyland Hotel in Edmonton Alberta. "Future Perspective in Orthodontics". For more information, please contact: Dr. Terry Carlyle, #1525 Weber Centre, 5555 Calgary Tr. S., Edmonton, Alberta T6H 5P9. (403) 435-3641.

August 21-24: Canadian Dental Association's Annual Convention, at the Edmonton Convention Centre, Edmonton, Alberta. Contact: Linda Teteruck, Canadian Dental Association, 1815 Alta Vista Dr., Ottawa K1G 3Y6. (613) 523-1770.

August 21-25: New Zealand Dental Association's Biennial Conference, Christchurch, New Zealand. Contact: Dr. E.A. Cope, Conference Secretary, 200 Cashel Street, Christchurch 1, New Zealand.

August 23-28: Dental Group Management Association at the Hyatt Regency in Vancouver, BC. For more details, contact: Ms. Joann Junkins, #3 Lakewood Gardens Lane, Madison, WI 53704 U.S.A. (608) 241-2109.

August 28-September 2: XIII World Conference on Health Education in Houston, Texas. For more information, write to United States Host Committee, XIII World Conference on Health Education, P.O. Box 20186, W-902 Stallones Building, Houston, Texas 77225, U.S.A.

August 29-September 7: Public Oral Health Planning in Malmo Sweden. For more information contact; Postgraduate Centre of Dentistry, Carl Gustafs vag 34, S21421 Malmo, Sweden.

September/Septembre 1988

September 7-9: Bristol 88 World Dental Conference University of Bristol, England, U.K. Decisions in Forward-

Looking Oral Health Care. For information contact: Mr. B.P. Matthews, Bristol 88 World Dental Conference, University of Bristol, Senate House, Bristol BS8 1TH ENGLAND, U.K.

September 15-17: Clindent '88 Clinical Dental Conference in London, England. For details, contact: Clindent '88, 90 Harley St, W1N 1AF London, England.

September 15-18: American Academy of Gnathologic Orthopedics at Caesar's Palace in Las Vegas, Nevada. For more information, contact: Ms. JoAnna Carey, 211E Chicago Ave., Chicago, IL 60611 U.S.A. (312) 642-5834.

September 23-25: American Academy of Esthetic Dentistry at the Hyatt Regency Cambridge in Cambridge, Massachusetts. Contact: Ms. Cheryl Kraus, 211E Chicago Ave., Suite 948, Chicago, IL 60611 U.S.A. (312) 664-2122.

September 23-25: California Dental Association's Fall Scientific Session, San Francisco, California. Contact: Cissie Cooper, Director, Scientific Sessions, CDA, 818 "K" Street Mall, P.O. Box 13749, Sacramento, California, 95853-4749. (916) 443-0505.

September 29-October 1: New Orleans Dental Conference at the New Orleans Hilton, Poydras at the Mississippi River in New Orleans, Louisiana. For more information, contact: Ms. Normalee Ward, 3101 West Napoleon Ave., Suite 119, Metairie, LA 70001 U.S.A. (504) 834-6449.

September 29-October 2: Canadian Academy of Endodontics is holding its annual session at the Fantasyland Hotel, West Edmonton Mall in Alberta. All dentists are welcome. Contact: Dr. Tom Mather, #1107 - 10830 Jasper Ave, Edmonton, Alberta T5J 2B3.

October/Octobre 1988

October 2-5: American Academy of Maxillofacial Prosthetics at Stouffers Harborplace Hotel in Baltimore, Maryland. For more details, contact: Dr. Gregory R. Parr, Medical College of Georgia, School of Dentistry, Augusta, GA 30912 U.S.A. (404) 721-2554.

October 4-7: American College of Prosthodontists at Stouffer's Hotel in Baltimore, Maryland. For more details, contact: Ms. Linda Wallenborn, 1777 NE Loop 410, Suite 904, San Antonio, TX 78217 U.S.A. (512) 829-7236.

October 4-7: American Academy of Dental Radiology at the Sheraton Hotel, Washington, D.C. For details, contact: Dr. William Wege, Medical College of Georgia, Augusta, GA 30912 U.S.A. (404) 828-2935.

October 5-7: 51st Annual Meeting of the American Association of Public Health Dentistry in Washington, DC. For information: Dr. R.G. Rozier, Dept. of Health Policy, CB 8140, Kron Building, University of North Carolina, Chapel Hill, NC 27599-8140, U.S.A.

October 6-8: Academy of Dentistry International at the Sheraton-Washington Hotel in Washington, D.C. For information, contact: Dr. Clifford F. Loader, 7804 Calle Espada, Bakersfield, CA 93309 U.S.A. (805) 832-3236.

October 6-9: American Association of Women Dentists at the Grand Hyatt-Washington Hotel in Washington, D.C. For information, contact: Ms. Cheryl Kraus, 211 E. Chicago Ave., Suite 948, Chicago, IL 60611 U.S.A. (312) 337-1563.

October 8-14: ADA/FDI Joint 1988 World Dental Congress Dentistry: Caring for the World at Washington, D.C. For more information, contact: Congress Secretariat, ADA/FDI Joint 1988 World Dental Congress, c/o American Dental Association, 211 East Chicago Ave., Chicago, Illinois 60611 USA or FDI Headquarters, Fédération dentaire internationale, 64 Wimpole St., London W1M 8AL, United Kingdom.

October 9-14: International Workshop on Cranio-facial Trauma sponsored by the Australian Cranio-Maxillo-Facial Foundation. For information, contact: Mrs. D. Moody, Executive Officer, 226 Melbourne St., North Adelaide, S.A. 5006, Australia.

October 10-15: American Academy of Implant Dentistry at the J.W. Merriot Hotel in Washington, D.C. For registration information, contact: Mr. John P. Winiewicz, P.O. Box 2002, Abington, MA 02351 U.S.A. (617) 878-7990.

October 12-16: American Society of Dentistry for Children at the Sheraton Bal Harbour, Bal Harbour, Florida. For information: Ms. Lana Wos, 211 E Chicago Ave, Suite 920, Chicago, IL 60611 U.S.A. (312) 943-1244.

October 19-21: Annual Conference of the Canadian Society of Forensic Science at the Westbury Hotel in Toronto. Theme: Advances in Technology: The Impact on Forensic Science. For further information, please contact: Canadian Society of Forensic Science, 2660 Southvale Cres, Suite 215, Ottawa, Ont. K1B 4W5 (613) 731-2096.

October 25-27: Medical/Hospitech 88 – 2nd International Medical, Hospital and Dental Equipment and Facilities Exhibition in Bangkok, Thailand. For more information, contact: SHK International Services Ltd., 22/F., 151 Gloucester Rd., Hong Kong. Telephone: 5-8326100.

October 26-29: American Academy of Periodontology at the Sheraton Harbor Island Hotel in San Diego, California. Contact: Ms. Jean Pierson, 211 E Chicago Ave, Suite 924, Chicago, IL 60611 U.S.A. (312) 787-5518.

October 26-29: 42nd Annual Meeting of American Academy for Cerebral Palsy and Developmental Medicine Deadline for free papers: February 12, 1988. Royal York Hotel, Toronto. INFO: AACPDM, P.O. Box 11086, Richmond, Virginia 23230 USA.

October 27-31: 23rd Indian Orthodontic Conference followed by Post Conference Workshop at the Manali Hill Resort. For details and registration forms, contact: Dr. Pradip Jayna, Organising Secretary, 23rd I.O.C., M-75, Connaught Place, New Delhi – 110001, India. Phone: 332-9516 or 9517.

October 28–November 1: American Institute of Oral Biology in Palm Springs, California. For details: Dr. Philip J. Boyne, Dept. of Surgery, Loma Linda University Medical Center, Loma Linda, CA 92350 U.S.A. (714) 824-4671.

November/Novembre 1988

November 10-13: Joint Meeting of the Canadian and American Pain Societies in Toronto at the Hilton-Harbour Castle Hotel. For information, contact: Canadian Pain Society, 3655 Drummond St, Room 1202, Montréal, Québec H3G 1Y6.

Novembre 21-24: Congrès international de l'Association dentaire française et le Festival international du Film et de la Vidéo dentaires à Paris. Renseignements: A.D.F., 92, av. de Wagram, 75017 Paris, France.

November 23-25: Swedish Dental Society in Stockholm Sweden. For information, write: Ms A.C. Nackstad, Nybrogatan 53, S-114 40 Stockholm, Sweden.

Obituaries/ Nécrologie

Bird, R.R.: Dr. Bird, who practised in Winnipeg, was born in 1930 and graduated in dentistry from the University of Toronto in 1953.

Carroll, R.: Dr. Carroll, who was born in Australia in 1919, received his BDS there. In Canada, he was a graduate of the University of Toronto dental school in 1955. He practised in Vancouver and was a Life Member of the Canadian Dental Association.

Edward, Frank A.: Dr. Edward, who was born in 1904, received his DDS from McGill University in 1927. He had been in retirement and had practised at St. Adolphe d'Howard, Québec. He was a Life Member of the CDA.

Malone, Emmett M.: A native of Moose Jaw, Sask., where he was born in 1930, Dr. Malone was graduated with his DDS from the University of Alberta, in 1967. He practised in Burnaby, British Columbia.

Olsen, Grant McAllen: Born in 1905, Dr. Olsen graduated from the University of Alberta dental school in 1934. He practised in Alberta's northland, the Northwest Territories, and Edmonton. He was a Life Member of the CDA.

Sybersma, Dirk Thomas: Born in 1943, Dr. Sybersma received his DDS from the University of Toronto in 1966. He conducted a practice in Stratford, Ontario.

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NORTHERN SASKATCHEWAN: For sale. Long-established practice. Excellent location. 1200 sq. feet corner office. Three fully-equipped operatories; two with Pelton Crane and Cox units. Satellite practice also available. Terms reasonable. Phone (306) 763-3676 evenings.

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Inquiries and applications, which should include curriculum vitae and names of three referees, should be sent to: Dean, Faculty of Dentistry, University of Western Ontario, London, Ontario, N6A 5C1. In accordance with Canadian Immigration requirements, this advertisement is directed to Canadian citizens and permanent residents of Canada. Closing date for receipt of applications is May 30, 1988.

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CANADA: Oral and maxillofacial surgeon, personable, responsible, completing major metropolitan residency with extensive training in all aspects of specialty seeking locum or temporary associateship for summer and fall 1988 or part thereof. Available for associateship full-time by summer 1989. Reply in confidence to CDA Box 2409.

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sition and practice must be realistically priced. Reply CDA Box 2410.

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by Jean Cives

Patient, patient contact

I lay awake last night; it was the garlic in the spaghetti and meatballs, I suspect. I imagined a satellite photograph of my intestinal tract would show a circular pattern indicating a hurricane was developing about the ileo-jejunal junction. A sort of internal tornado which needed bicarbonate of soda as a cloud-seeding program for disturbance in aged intestines was developing. I began to wonder in the small hours of morning what patients I was meeting at 8:30 a.m. I was recollecting those people who I tried to treat with all the enthusiasm of — what could I call it — an intelligent idiot.

Two former friends who reached academic fame counselled me on patient vagaries. One told me that after graduation, he spent a year away in a country practice, returned, and did a 99-cent course in Orthodontics, then went back to the hometown on the Prairies to straighten up both local dentists and local children's teeth. His third patient seeking a bit of tooth-straightening, arrived with Mama who listened at length to his learned diagnosis and treatment, with flash cards models, etc. — the usual orthodontic smoke and mirrors as I like to think of it — and she said "Sure, go ahead, but please get the teeth straight by 4:30, cos our bus leaves at 5:00". He left shortly after for graduate school in Orthodontics, having failed his public.

The second set up his first office in a logging-mining town many, many years ago. There he was, all white-starched short coat, brass plate out front, come to cure oral septicaemia among the forests and mines. Those days, you may recall (if you do, my congratulations on still being in practice) were fraught with the dangers of septic teeth — no end of things that dental abscesses caused — insanity, zits, various female disorders, and when in doubt, tear them out, the teeth, that is. In these modern times, I see all the same diseases attributed to silver amalgam — when ever will we learn? To continue, about the third day, a logger about seven feet high and 3½ wide collapsed into his chair, pointed into the cavern that passed for a mouth, and said "Take that one out". My friend forgot all he had heard about diagnosis and instantly agreed. But the logger said, "Hurt me, and I'll drop

ya out the window." In those days, again, it was our Profession's wont to locate on the second floor; the stairs acted as the present day questionnaire on general health. The theory and practice was that if John or Jane Citizen could climb a set of stairs, they were fit for dental treatment, general anesthesia and all. So, my friend saw his whole life pass before his eyes in retrospect; however, in that review, he paid a lot of attention to the bit on Local Anaesthesia, and so suitably refreshed, found the Inferior Dental nerve, extracted the tooth, was paid \$1.50, continued in practice there for a year, and returned to attend Medical School, and a very successful career in Academia resulted.

My physician friends tell me of the mildly upsetting episodes of citizens exposing various parts of their anatomy with most astounding explanations of how that afflicted part arrived in its present state. Of course, most of these were sexual in nature because, I suspect, the sexual behaviour of human beings combines the most complex and the most absurd of the human condition. But the mouth, according to Freud, is a significant part of the human, and I suspect the bizarre and the unlikely are part of your exposure to patients, as it would have been to Freud in Vienna in the 1890s.

I recollect the patient who brought a letter from a physician wherein he appealed as one human to another to do something, anything for this lady. The exigencies of caries and dental practice of the day and place had led to the extraction of every second tooth. The result was an occlusion of Byzantine fit, of demented dynamics, resembling that of a shark rather than a homo sapiens. This lady, and a lady she was, with demure manner, polite attention, and the persistence of Sisyphus (a classical allusion — the chap who rolled a stone uphill, only to lose control just at the top and have the stone roll downhill again — the norm of Canadian dental practice?)

She cried. Now being a male, I am disarmed by a crying lady. I wish I could cry with such effects. My apologies to the liberated members of the profession, but have you ever had a male weep over his dental problems? You do not know what

impotence is until you have experienced this. To return to the case history. She was a rotund person of short stature, "of pleasing plumpness", as the balladeers put it, but "la boule de suif", nevertheless. (Another allusion for my friends of Francophile persuasion.)

There she was weeping before me, an embarrassment of grand proportions. "What do you really want?", I cried in desperation. She said, "I want partial dentures." Of all things, we could provide for this denturely depressed, this was number one impossibility. When the upper canine occludes with the ridge of the lower, RPD's are out.

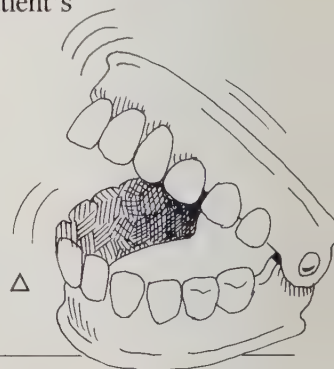
"Why?" I blurted out, forgetting all the Transactional Analysis of "I'm O.K., You're O.K." A catastrophic mistake, a grand blunder, revealing to all my ineptitude.

She replied, "I cannot eat".

This was a turning point in my career, a moment of crisis. Here I was looking at a 200-lb woman — or some 90 kgs, who claimed she could not eat. My impulse was to burst into demoniacal screams of laughter. This situation was absurd beyond belief.

I am sorry. I cannot remember what I said or did. And that's life for you. You thought the conclusion of this tale would have a moral, a direction, an insight into patients' complaints. But no, I was as incompetent, as simple, as you would be — and are — I made noises passing as communication in the modern idiom, as you would.

But at 4:00 a.m., she haunts me. As do my other endeavours on the fringe of humanity. My tale has an ending — when faced with a total absurdity now, I listen with grave interest, with the attention of the wedding guest in the "Rime of the Ancient Mariner", and agree wholeheartedly with the patient's concerns — but allow that I am unsuitable for their remedies. They merely think I am incompetent, but not unsympathetic. Δ



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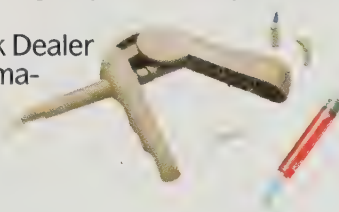
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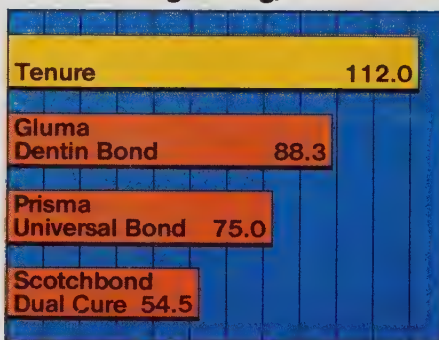
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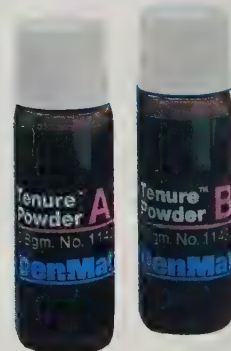


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- "Oxalate Dentin Bonding", Dr. H.E. Strassler and Dr. S. Weiner, accepted for publication by Compendium of Dental Education.
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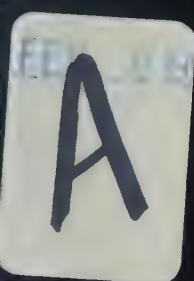
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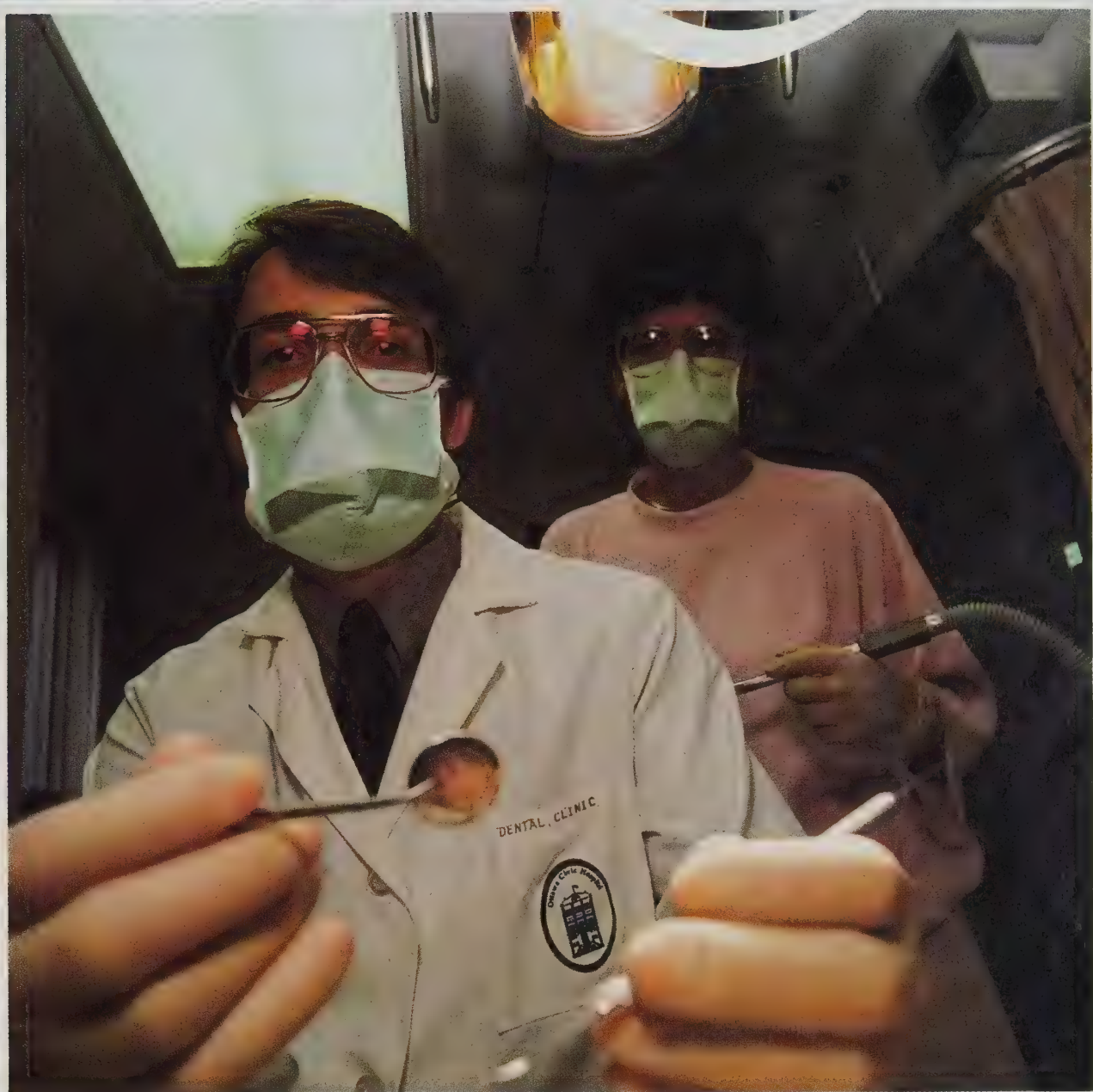
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CDA Leads the Way: (and so it should!)

Following the success of the National Conference on Infection Control last February, Dr. Clyde Covit of Montréal wrote to CDA President Dr. Ron Markey, "I am writing to you today, on behalf of the Ordre des dentistes du Québec, in order to commend you and your Executive Council on taking the initiative of holding a Conference on Infection Control and for the manner in which the Conference was organized".

Undoubtedly, Dr. Markey and his Executive were pleased with Dr. Covit's accolades, and rightfully so, but really, national organization is their job – that's why they are in the positions they hold. That is why CDA headquarters was moved from Toronto to Ottawa in 1976. That is why CDA was founded in 1902. National dentistry is what it is all about!

Nationalism in this vast country of ours is never easy. How do you unite people when they inhabit a land that stretches 5,514 kilometres from sea-to-sea? Although 90 per cent of Canadians live within 100 miles of the American border, the majority of them have never visited more than three or four provinces. That is why that "national spirit" is so vital to our country and any organization within it. Although the actual longitudinal centre of Canada lies just a few kilometres east of Winnipeg, their citizens have no right to claim that Canada revolves around their fair city. Nor can Toronto, Vancouver, or Montreal, or any other region in Canada. Canadianism, and similarly dental professionalism, revolves around that subtlety entitled "national".

As is our country, so is dentistry, governed in tiers; (yes, and on occasion, in tears!). Starting at the society level for local concerns; to provincial associations for licensing and broader border-to-border issues; the dental direction rises to the CDA national headquarters for those causes which only an Ottawa-based organization can efficiently direct for the benefit of all . . . dentists and patient alike.

CDA's national leadership is no easy task – binding together 14,587 dentists into a unified voice; but when the provincial associations cooperate at the CDA tier the results are indeed venerable. Witness the results of unity.

Infection Control is now a national project; Dental Awareness is becoming a household word; Federal Government Relations, non-existent five years ago, are harmonious and co-active; dental faculties are reducing enrolment to balance supply and demand; capitation is being challenged nationally by a Third Party Committee; taxation is constantly monitored, and the list goes on.

The President and the Executive Council elected by our Board of Governors, who represent us, have capably demonstrated that CDA can lead the way, but our task is to remind them "and so it should!". Δ

P. Ralph Crawford, DMD
Editor, JCDA

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President's Column

Continuing Education, Professionalism vs. Profit



How do you feel about continuing education? Are all the programs being offered to you from countless sources credible and exciting? Do they meet the fundamental standards of education you have a right to expect? Do they meet the highest standards of ethics and professionalism that we should be demanding as health care providers? What should a profession define as fundamental continuing education standards?

The answers to the above questions would differ dramatically if one were to conduct an informal poll in different regions of the country. The profession unanimously endorses the value and necessity of continuing education; indeed it is mandatory in some provinces. We have also demonstrated on a number of issues that we will not tolerate less than the most professional standard of care. We promote adherence to a strict ethical code, and demand that our licensing bodies enforce these codes in order that the public will be protected at all times. We have worked hard to achieve the status of caring members of the health team. Our professionalism is important to us. If we believe all or even most of the above, why do we then put up with many inferior products that pass our way under the "guise" of continuing education?

Our profession has access to all forms of continuing education. On a weekly basis, high calibre programs are available through our universities, licensing bodies, corporate bodies, national associations as well as through a number of individual entrepreneurs who strive to put together courses that are timely, informative and beneficial. Lectures, seminars, participant-involvement courses, video presentations, newsletters, journals, conventions and self-evaluation programs to name a few, provide opportunities for every member of our team to remain current, and involved, and to remain on the leading edge of developments in our profession. Nevertheless, we also have areas where we should be putting our house in better order.

By now, we should all be weary of the solicitations to double the speed of our service, output and incomes. What about quality of care and compassion for our patients? Marketing is fine, particularly internal marketing, aimed at providing those extras that make our patients feel special and important. It is not fine when it encourages the stretching of our ethical codes to the very limit, and sometimes beyond. It is reasonable to demand a fair fee for the privilege of communicating knowledge to one's fellows. On the other hand, are we selling too much? The "learning circuit" has become a lucrative place to be; but at what cost? Is the cost, perhaps, in part, a devaluation of our professional status and image, in our rush to participate in the latest fad?

Our profession has made giant strides in fundamental and continuing education. We have too much at stake to let a few over-zealous "business people" tarnish the principles of professionalism we have worked so hard to nurture. Think about it. Δ

*Ron J. Markey, DDS, MSD,
President of the Canadian Dental Association*

CDA formulates Infection Control Recommendations, Legal and Ethical Statement

Following deliberations at the Canadian Dental Association's Infection Control Conference in Toronto, recommendations for infection control procedures in dental offices and a statement on ethical and legal considerations of treating patients with infectious diseases, have been formulated.

The documents received the approval of the CDA Board of Governors at the Interim meeting, March 25-26, last.

Copies of the recommendations and statement have been sent to all CDA members along with a letter from the CDA President, Dr. Ron J. Markey.

The Journal hereby provides the texts of these vital documents for all the dentists of Canada.

At the Conference in Toronto, Dr. Markey noted that "the Canadian Dental Association sees the issue of proper infection control techniques as one of its highest priorities, and, as such, organized this Conference for the Canadian dental community."

Participants

Input was provided by Dr. Ray Wenn, a general practitioner from Charlottetown, P.E.I., and a member of CDA's Executive Council; Dr. Alan Meltzer (M.D.), Senior Medical Advisor, International Programs, Federal Centre for AIDS, Health Protection Branch, Health and Welfare Canada; Dr. Janice Handlers, Associate Professor of Pathology at the USC Schools of Dentistry and Medicine; Ms. Tracey



Dr. Ray Wenn

Tremayne-Lloyd, who practises law with a Toronto legal firm, in litigation, much of which is health disciplines advocacy; Benjamin Freedman, PhD, Associate Professor at McGill University's Centre for Medicine, Ethics and Law, who is also Clinical Ethicist at the Sir Mortimer B. Davis — Jewish General Hospital in Montreal, and Ms. Yvette Perreault, a Regis-

tered Psychiatric Nurse, who, since 1985 has been an AIDS support counsellor for the AIDS Committee of Toronto.

'Concerns and questions'

Dr. Wenn said he was speaking as a general practitioner "with the same concerns and questions that many of you have." He hoped "to place some perspective on the problem (of infection control) from a GP's point of view."

He said that in his own practice experience "over the past 12 years, I did not consider that I, my staff or my patients, were being placed in a situation of risk in delivering or receiving dental treatment. That is not to say that there is no risk from infectious diseases from the practice of dentistry.

"There has always been a risk factor in practising dentistry or any of the other health care professions," Dr. Wenn said. "If we wish to be health care workers — doctors, dentists, hygienists, nurses, etc., then we always run the risk of contracting any of the infectious diseases that our patients may be carrying.

"Infectious diseases such as the common cold, influenza, Herpes, Hepatitis B, tuberculosis and pneumonia, are viral and bacterial entities that we have coped with in the past, continue to do so now, and will in the future."

Now, however, Dr. Wenn said, "our lives and our practices" have been changed by AIDS. Since its discovery as a separate and serious disease entity in

1981, our lives as health care workers have changed forever."

"We must protect ourselves from this virus. And by ourselves, I include our staff and indirectly, our families", Dr. Wenn continued. "This protection must also extend to our patients. We must not forget our responsibility to provide an environment for the delivery of dental services that is not only safe for ourselves and our employees, but also, our patients. They have to depend upon our ability to exercise safe practice techniques. Our patients have a right to expect the dental team can and will provide the proper safe environment."

He noted that he believed the risk of health care workers contracting HIV infection from a patient was "extremely low".

However, he said, "we must assume our responsibility for infection control in a serious and conscientious manner. There are documented cases of certain infectious diseases being transmitted in dental offices."

He spoke of some highly elaborate sterile operatory environments described in the literature and said that "it is my opinion that the dentists of Canada cannot be expected to operate an office based on those recommendations. We would all have to reconstruct our offices at enormous cost." He believed "the cost of dental treatment would skyrocket and be beyond the ability of most patients to pay."

The answer to the dilemma, he believed, was to "establish reasonable but effective infection control guidelines. Guidelines

that can be applied to our everyday practice of dentistry. Guidelines that are the same for every patient, every visit, for our entire practising career."

Dr. Wenn acknowledged that "to incorporate such guidelines into our practices will involve a cost. In my practice", he said, "I have calculated an approximate yearly cost of \$4,500 for gloves, \$3,000 for masks, \$1,500 lease payment for more handpieces, \$300 to purchase more hand instruments and \$700 for increased use of disposables. A total increased cost of approximately \$10,000.

He calculated further that his office "has approximately 5,000 dental visits per year. Therefore, the increased cost per visit is two dollars. I do not think I could refuse to change my pattern of practice based on an increased cost of

Recommendations for Infection Control Procedures

Dentists have always been concerned about disease transmission. Traditionally, this has been accomplished by the sterilization of surgical instruments. The appreciation that dentists are at risk for acquiring Hepatitis B has resulted in the realization that disease may not only be transmitted from patient to patient, but also from patient to dentist and dentist to patient. This has created the philosophy that all blood, saliva and other body fluids must be considered as potentially infectious. Such an understanding has necessitated a revision of previous infection control procedures.

The implementation of such changes will occur if the dental profession is aware of how practical infection control may be achieved. As the initial phase of this educational program the following infection control procedures have been developed.

Since medical history and examination cannot reliably identify all patients infected with HIV, HBV or other blood-borne pathogens, precautions should be consistently used for *all* patients.

- ☐ gloves should be worn in treating all patients when contact with blood, saliva and body fluid is anticipated;
- ☐ hands should be washed with a germicidal soap prior to and immediately after the use of gloves;
- ☐ masks should be worn to protect oral and nasal mucosa from splatter of blood and saliva;
- ☐ eyes should be protected with some type of covering to protect from splatter of blood and saliva;
- ☐ rubber dam should be used in restorative dentistry wherever possible;

- ☐ up-to-date immunization status must be maintained for dentists and staff with patient-related duties. This includes Hepatitis B, measles, mumps, rubella, and influenza;
- ☐ appropriate sterilization methods should be used on all dental instruments;
- ☐ handpieces and similar intra oral devices should be sterilized according to the manufacturer's directions; if not sterilizable, they must receive appropriate high level disinfection;
- ☐ counter tops, working surfaces and operatory furniture, especially if aerosols and/or blood splatter will be generated, should be protected by disposable covers and/or disinfected by a suitable liquid;
- ☐ utilization of disposable materials is encouraged. Disposable materials should be discarded in plastic bags. Sharp items, such as needles and scalpel blades, should be placed in puncture-resistant containers prior to disposal;
- ☐ a high temperature wash cycle, with normal bleach concentration, followed by machine drying is recommended for clothing. Dry cleaning and steam pressing is also appropriate.

*Approved by the
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Canadian Dental Association
March 1988*

two dollars per visit. I am sure most patients will accept this increase as the cost of providing up to date infection control."

Refusal to treat

Dr. Wenn said he believed it should be very disturbing to the profession to read about dentists who refuse to treat AIDS patients. "This should not be the image

that we as a profession are presenting to the public. This distorted view of our profession is arising because we as professionals are having great difficulty in coming to grips with our responsibility in treating the unfortunate victims of Acquired Immune Deficiency Syndrome."

He stressed that "as dentists we should know the current health status of our patients. We should keep our medical his-

tories up to date. This includes all of their health problems, not only their HIV status. We need this information to treat our patients properly."

As health care professionals, the dentists' responsibilities should include the important goal of education. "We must educate ourselves about AIDS. We should know the oral signs and symptoms. We should be familiar with Kaposi's Sarcoma,

Statement on the Ethical and Legal Considerations of Treating Patients with Infectious Diseases

The Canadian Dental Association believes that individuals with infectious diseases should have access to dental treatment, and that treatment should provide for the well-being of these patients as well as for the protection of the health of the public and of the dental care providers. The dental profession in Canada has a long tradition of providing appropriate and compassionate care to the public, including special groups with special needs. It is the intention of the Canadian Dental Association to maintain related guidelines based on current scientific knowledge and accepted legal, moral and ethical imperatives. Policy will be reviewed on a regular basis and may be modified as new information and developments become available.

A number of facts must be considered:

1. Serious and potentially life-threatening infections such as those caused by Human Immunodeficiency Virus (HIV) and Hepatitis B Virus (HBV) exist throughout Canada, affecting several hundred thousand persons, and are transmissible.
2. Most of those who have been infected with the HIV and/or the HBV are unaware of their infected state and are, therefore, capable of transmitting the infection unknowingly to others. Patients so infected cannot always be readily identified in the dental office by means of a medical history and examination.
3. Adherence to current infection control procedures (as outlined in CDA Guidelines on Infection Control) can virtually eliminate the risk of transmission of HIV or HBV within the dental office setting. Where such infection control procedures are used, there is no discernible risk of transmission of HIV or HBV from patient to dental health personnel, from dentist or other dental personnel to patients, or from dental patients to other dental patients.
4. The dentist has a professional obligation to maintain the standards of practice of the profession and, accordingly, must ensure that infection control procedures are carried out in his or her practice. Dental personnel recognize an obligation to maintain currency of knowledge of infection

control procedures and to apply these procedures in the practice setting. Dental personnel should also accept a responsibility to contribute to public understanding of effective approaches to infection control.

5. Dentists are the only persons who can provide a comprehensive oral diagnosis, plan overall treatment and management of patients with dental diseases or injuries and provide necessary dental services. As professionals qualified by their educational preparation and license to practise, dentists recognize a moral and ethical requirement to render necessary dental treatment to all members of the public. Accordingly, a dentist must not refuse to treat a patient on the grounds of the patient's HIV or HBV infection status.
6. A dentist infected by HIV and/or HBV who practises current infection control methods does not pose a risk of infecting patients. However, concern has been expressed as to the competence of practitioners to practise once the diseases have progressed. It is recommended that early consultation be pursued between the CDA and provincial dental associations on this issue and that consideration also be given to the issue of dental auxiliaries so infected.

Dental treatment can and should be rendered in the dental office to most patients with infectious diseases since their safe treatment simply requires following established communicable disease protocols and taking routine precautions to protect the dentist, the staff, and other patients who attend the office. It is recommended that institutional-based facilities be utilized to deal with those patients in advanced stages of infectious diseases who have other medical complications which make delivery of dental care in a specialized facility necessary for proper management of the patient's general well-being. CDA encourages further development of specialized institutional facilities dedicated to this purpose.

*Approved by the
Board of Governors
Canadian Dental Association
March 1988*

Candidiasis and Hairy Leukoplakia, and recognize that rapidly advancing periodontal disease can be a significant indicator. We should be familiar with the general systemic problems associated with this disease. Symptoms such as persistent fever, night sweats, involuntary weight loss, persistent diarrhea, chronic lymphadenopathy and general malaise, are indicators that should raise our degree of suspicion."

Also, he continued, "we should know which categories of lifestyle constitute high risk behavior." And, he added, "we should know the routes of infection", and. . . "understand the pathogenesis of this disease."

This educational process must also include the dental office staff, he said. "We must provide them with proper infection control techniques and the knowledge and training to perform them properly. They should understand that risk of HIV infection is directly related to lifestyle and not to employment in a dental office."

"Our profession has to be concerned with education of our patients and the general public. Nothing could be more detrimental to our Dental Awareness Program and our degree of "busyness" in our offices than a widespread belief and fear that a dental office is a dangerous place; a place that transmits infectious diseases, especially AIDS. Nothing could be further from the truth. It is our responsibility to ensure that our patients, and the Canadian public in general, understand this truth." △

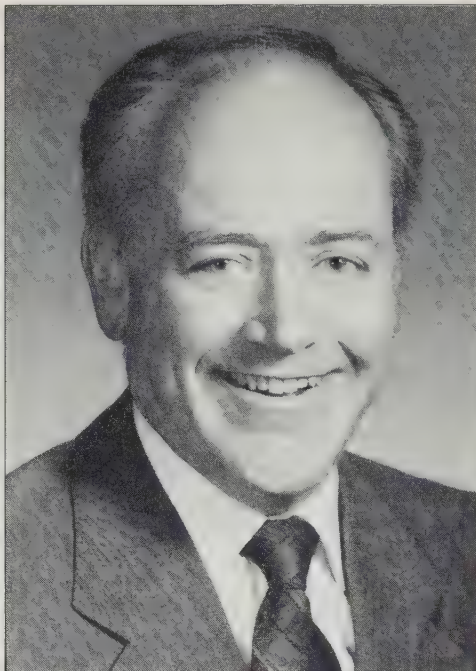
Did you know?

The official emblem of dentistry in Canada was adopted by the Board of Governors in June 1968. The design uses the rod or staff with a single entwined serpent which was the ancient representation of Aesculapius, the god of healing. The Greek letter △ (delta) denotes dentistry and the letter ○ (omicron) symbolizes the unlimited services of the profession.



Tax proposal alert

Possible federal sales tax on dental services



Dr. Robert N. Hicks

The following proposed federal tax alert has been transmitted in letter form to Canadian Dental Association members by CDA Taxation Committee Chairman Dr. Robert N. Hicks. The Journal is herewith extending the important message to all Canadian dentists:

The 1987 Sales Tax Reform White Paper identified a proposal to initiate a new federal sales tax on goods and services. Over the past year, this proposed sales tax has been referred to as a Business Transfer Tax, a Goods and Services Tax, a Value Added Tax and a National Sales Tax. While technical aspects differ as to how the tax will be applied under these titles, the effect of the proposed federal sales tax is that the tax will be applied to a broad base of goods and services — including dental services.

The Health Sector Exemption section of the 1987 Sales Tax Reform White Paper, however, states the following:

"Health services provided by the private sector . . . dental practitioners . . . — would be exempt to the extent that such services are paid for pursuant to the Canada Health Act or under government-funded social welfare programs or certain

other prescribed federal or provincial statutes or programs. Included in this latter group would be health services provided to members of the armed forces, the R.C.M.P., inmates of penitentiaries, and health services paid for under provincial workers' compensation plans.

Private hospitals and individual practitioners would thus be exempt on the provision of government-insured or otherwise government-funded services, but would be taxable on amounts received in respect of services that are not insured under public plans."

Most of the proposals for implementation of this federal sales tax involve the consumer — i.e. the dental patient — paying a suggested 8-10% tax on the services received. The provider of the service (i.e. the dentist) will be able to "credit" all taxes paid on supplies (but not labour costs) used in the provision of services against the taxes collected. The "net tax" will then be remitted by the dentist to the federal government.

The CDA is most concerned about the financial impact of this proposed tax on our dental patients. An increase in dental fees of the magnitude of 10%, created by this proposed federal sales tax, will obviously reduce accessibility to dental services for many Canadian dental patients.

The CDA Taxation Committee has initiated discussions with the Department of Finance and intends to obtain dialogue with the Minister of Finance in order to express our strong opposition to this proposed federal sales tax being applied to dental services. Most medical services will be exempt from this tax, since such services are funded under the Canada Health Act.

Your support, through letters to your Member of Parliament, and the support of your patients, through letters to their members of Parliament, may be required in the near future. The Taxation Committee will provide you with up-to-date information on this issue. Background material will be provided to you in the event that your direct support is required. △

Robert N. Hicks, DDS, MS
Chairman
CDA Taxation Committee

CDA Board approves radiation guidelines for dental office

Guidelines developed by the Health Care Council of the Canadian Dental Association were presented at the 1988 Interim Board of Governors meeting.

The full text follows:

GUIDELINES FOR THE CONTROL OF RADIATION IN THE DENTAL OFFICE

Introduction

Since the Federal Government maintains jurisdiction over the standards of construction and functioning of x-ray equipment, while its installation, registration and office design criteria for its use are promulgated by provincial legislatures, any guidelines developed by CDA for the use of x-radiation in the dental office should not deal specifically with legislative areas, but rather set forth standards of practice for dentists which reflect and demand professional competence and judgement.

General Guidelines

1. All x-ray equipment must conform to the Federal requirements of the Radiation Emitting Devices Act.
2. All equipment installation and room design criteria, e.g. with respect to wall insulation, (lead lining or equivalent) must be in conformance with provincial regulations. In the absence of existing provincial regulations in any particular jurisdiction, the dentist should refer to Health & Welfare Canada Safety Code 22, National Council on Radiation Protection & Measurements, Report 35, or the ADA Recommendations on Radiographic Practices, 1981.
3. All operators should possess an adequate knowledge of radiation physics, radiation hazards and be able to produce consistent radiographs of diagnostic quality with a minimum of overall radiation exposure. All operators should be licensed or certified according to a standard recognized by the provincial dental licensing body. Radiation Protection licensure may also have to be achieved through the dental associations.
4. It is highly desirable that a regular inspection program of x-ray equipment (usually 3 years) be carried out on a constant basis. It is recommended that a program of quality assurance be established in all aspects of radiological practice in the dental office on at least an annual basis.

5. It is highly desirable that the operator/owner request a radiological technologist, radiation physicist or similarly qualified person to perform a regular inspection of the x-ray equipment to assess radiation output and "normalize" the x-ray taking system; that is, ensure that existing exposure and processing conditions are producing radiographs within an acceptable exposure range.

6. An exposure guideline chart should be fixed near the x-ray timer indicating kVp, mA and the exposure time to be used for children, adults and edentulous patients.

7. The dentist should view exposed radiographic film under optimal conditions. A magnifying glass with the variable intensity viewer is desirable. Extraneous light should be minimized.

8. It is highly desirable that dentists enrol in continuing education in the many aspects of diagnostic radiology, physics of radiology and radiation biology.

Protection for Operators

Any female operator who suspects or knows she is pregnant must be assured that for the duration of her pregnancy she will experience minimum radiation exposure.

Operators in Training

1. Students in radiography training programs must work under the supervision of a licensed dentist.
2. Students in radiography training should be 18 years of age. Any student less than 18 must not receive any occupational radiation as spelled out in Safety Code 22, Health and Welfare Canada.
3. Students *must not* be exposed to the primary X-Ray beam.
4. Deliberate exposure of an individual for training purposes *must not* be performed.

General Guidelines for Office Personnel

1. A room must not be used for more than one x-ray procedure simultaneously.
2. Persons not essential to the radiologic procedure must not be in the room during the patient exposure.

3. When the operator has no shielding, i.e. cannot leave the room, he/she should stand between 90° and 135° to the primary beam and 2 meters from the subject being radiographed. There is no requirement, in a dental workload, for the operator to wear a protective apron.

4. The dental film should be fixed in position using a holding device.

5. If parents or escorts are called to assist, then protective clothing should be worn by those persons.

6. The x-ray housing must not be held by the hand during operation.

7. All dental personnel involved in the taking and processing of radiographs should wear personal dosimeters. If continuous use is not felt necessary, then periodic use is recommended to ensure that the current radiologic practice is exposing personnel to acceptable radiation limits as defined in Safety Code 22.

8. In situations where personnel record any radiation on a regular basis on the dosimeter badge, remedial steps must be taken to correct the situation, as the normal situation for good dental radiology should be nil.

Guidelines to Protect the Patient

The risk to the individual patient from a single dental radiograph is very low. However, the risk to a population is increased by increasing the frequency of radiologic examinations and by increasing the number of persons radiographed. Every effort should be made to minimize the amount of radiation required to diagnose the situation.

1. The prescription of a radiologic examination by a licensed dentist must be based on a clinical examination for the purpose of obtaining information not readily available from other sources.
2. The justification for taking dental radiographs must be determined by a perceived need to obtain specific information which could contribute to diagnosis or prevention rather than utilizing the concept of the routine periodic examination with or without examining the patient.
3. One should determine if any recent radiographs are available and see if those are adequate.

4. When a patient changes dentists and diagnostic information is sought which might have been available on previous radiographs, then the new dentist should attempt to obtain such radiographs, rather than routinely issue a new prescription for radiographs.

5. The number of radiographs required should be kept to the minimum, consistent with obtaining the required diagnostic information.

6. Operators should select films of a speed and quality that will permit the production of radiographs of an acceptable diagnostic quality with minimum exposure of the patient to radiation.

7. The quality of radiographs should be monitored routinely to ensure that diagnostic requirements are met.

8. The decision to repeat films should not be based on ideal technical requirements as past practice, but rather be based on a lack of required diagnostic information as prescribed.

9. A lead apron and thyroid collar must be used when exposing intra-oral films.

10. The x-ray beam for intraoral radiographs should be collimated so that it irradiates only the minimum area necessary for the examination. Under no circumstances should it be in excess of 7 cm. (2-3/4") at the level of the skin. Rectangular collimation is now available and dental machines should be converted to it as training of staff permits.

X-Rays and the Pregnant Patient

In dental radiology, good radiological practice reduces the foetal dose to an acceptable minimum and does not constitute a significant hazard, however elective procedures should be deferred until after pregnancy.

Conclusion

If all the above guidelines are followed then patients can be assured that they are receiving a level of radiation exposure that is at the safest level possible. The frequency of a radiological examination is a matter of clinical judgement. The selection of equipment and techniques used is the decision of the dentist. The aim of these guidelines is to ensure that dental offices comply with the ALARA (as low as reasonably achievable) principle and keep the amount of patient radiation exposure at as low a level as possible given current accepted radiological practice. Δ

*Approved by CDA Board of Governors
March 1988*

Treatment of patients with joint prostheses

The Health Care Council of the Canadian Dental Association prepared a statement on the dental treatment of patients with joint prostheses which was presented at the 1988 Interim Meeting of the CDA Board of Governors, and approved.

The text of that statement is as follows:

STATEMENT ON THE DENTAL TREATMENT OF PATIENTS WITH JOINT PROSTHESES

The CDA urges dentists to become aware of the evidence of the causes of failure of prosthetic joints.

Dentists treating patients with prosthetic joints are therefore urged to follow these procedures:

1. If possible, all currently required dental treatment should be completed before joint replacement;
2. In a patient who already has a joint prosthesis, his orthopedic surgeon should be contacted to determine the prophylactic antibiotic coverage thought most indicated;
3. After a dental procedure, a patient should be informed that, if any problems develop in a prosthetic joint, despite prophylactic antibiotic coverage, he should immediately contact an orthopedic surgeon, as rapid action may be vital to the salvage of the prosthetic joint.

The Canadian Dental Association encourages further research in the optimum treatment of patients with joint prostheses and will continue to make information on this topic available to Canadian dentists.

Further information can be found in the

following resources:

Jacobson, J.J., Matthews, L.S., **Bacteria Isolated from Late Prosthetic Joint Infections: Dental Treatment and Chemoprophylaxis**, Oral Surgery January 1987.

Jacobson, J.J., Millard H.D., Plezia, R., Blankenship, J.R., **Dental Treatment and Late Prosthetic Joint Infections**, Oral Surgery April 1986, Vol. 61, No. 4.

Jaspers, M.T., Little, J.W., **Prophylactic Antibiotic Coverage in Patients with Total Arthroplasty: Current Practice**, JADA, Vol. III, December 1985.

Howell, R.M., Green, J.G., **Prophylactic Antibiotic Coverage in Dentistry: A Survey of Need for Prosthetic Joints**, General Dentistry, July-August 1985.

Mulligan, R., **Late Infections in Patients with Prostheses for Total Replacement of Joints: Implications for the Dental Practitioner**, JADA, Vol. 101, No. 1, 1980.

*Approved by the CDA Board of Governors
March 1988*

Editor's Note: Following the publication of the article: "Prosthetic Joints, Antibiotic Prophylaxis and Dental Treatment" (JADA May, 1988, Vol. 54, No. 5) by Dr. John Hardie of Ottawa, the CDA received several inquiries whether indeed there was a policy from the national office regarding the handling of such cases. The Journal is pleased to publish this recently proclaimed CDA policy statement.

Did you know?

Ever since edition number one in 1935 the Journal of the Canadian Dental Association has been bilingual. For near 50 years the Journal contained both Canada's official languages in the *one issue* (usually the French at the back!).

In 1984 CDA members were offered the choice of receiving the Journal in the language of their preference. Policy prescribes that each section of the Journal containing the Editorial, News, Brieflies, the President's Column, and other regular contributions, is fully translated into English and French.

All advertisements are published in the language in which they are received. This is why the "English" version will have some advertisements in French and vice versa . . . the advertiser has requested it.

Similarly, many "English" Journals will have a scientific article in French with an English abstract.

The Journal does not translate scientific material; the language of publication depends upon the author's submission. The annual average is about 45 English articles and eight in the French language.

This particular issue — June/Juin, 1988 Vol. 54, No. 6 — will be distributed to 2,956 French readers and 14,553 English.

Executive Director's Report of 1988 Interim Meeting of CDA Board of Governors

HIGHLIGHTS AND PRINCIPAL DECISIONS

The following is a report highlighting events of the Interim Meeting of the CDA Board of Governors, held in Ottawa on March 25-26, 1988.

Audited Financial Statements

The Board reviewed and approved the audited financial statements of the Canadian Dental Association and the Canadian Dental Research Foundation, prepared by the firm of McCay, Duff and Company. The balance sheet and statement of revenue and expenses are published in this issue of the Journal.

1989 Budget Planning Meeting — 1989 Fee Increase

The Executive Council pre-board meeting will be held June 9-11, 1988. A portion of this meeting will be set aside to review 1989 budget allocations based on activity plans submitted by CDA Councils and Committees and priorities established by the Association. The necessity for and level of a 1989 fee increase will be determined at that time, and a recommendation brought forward to the Board of Governors at the 1989 Annual Meeting.

Space Requirements Analysis

An analysis of CDA headquarters space requirements for the next two years is being conducted. Management has requested that a range of scenarios be examined, focussing on the financial implications of each. Future leasing potential of the CDA property, and renovations required to optimize space and provide for staff expansion, are among the factors to be considered. The potential for increasing the equity position at the present location will be evaluated, and the advantages of purchase in alternative locales will be examined. Governors will be kept informed of developments, and

any resulting recommendations will be presented to future meetings of the Board.

Mortgage Loan — CDA Headquarters Building

As directed by Governors, the Management Committee reviews the status of the mortgage loan held against the CDA Headquarters building at each meeting. The outstanding loan balance as at December 31, 1987 was \$470,690.00. Management Committee reviewed a report on the advantages of discharging the mortgage loan, and is satisfied that this action is in the best interest of the CDA. A line of credit for emergency purposes has been negotiated and confirmed by the Toronto Dominion Bank.

The Board was presented with information which would indicate an approximate saving of \$12,000 – \$14,000 per annum in interest expense, by paying off the existing mortgage. Over the 17 years remaining on the term of the mortgage, this would amount to some \$221,000.

Governors approved a motion to pay out the current mortgage loan.

CDA Spokespersons — Funding

CDA Spokespersons are required to attend conferences and symposia in order to be informed of developments in their respective areas.

The Board approved a recommendation that CDA Spokespersons be reimbursed for their travel and accommodation costs related to their attendance at Management-approved conferences and symposia.

All individuals attending functions on behalf of the Management Committee will

be requested to submit reports on their activities; CDA Spokespersons will be requested to ensure that reports are prepared on significant developments in their areas of expertise.

All reports are to be forwarded to the Executive Director's Office, for appropriate distribution.

Structure-Management Committee

The current structure of the Management Committee, and the role of the Past-President were reviewed. An evaluation of comparative management structures at the provincial level has been carried out. A structure comprising a Vice-President, President-Elect and President is indicated. The main advantage to this type of structure is that all three Management positions are ascending; this reflects in a positive growth attitude and high profile for all Management members.

A proposal to structure the Management Committee to comprise a Vice-President, President-Elect and President was presented for Board approval. The timetable for this restructuring would see the first Vice-President elected at the 1989 Interim Meeting of the Board; the newly composed committee would be in place at the 1991 Interim Meeting. Governors approved the proposal and the timetable for restructure as presented, and directed the Council on Constitution and By-Laws to incorporate this policy in the CDA By-Laws.

CDA Insurance Coverage

The existing policies held by CDA have been reviewed and current insurance

requirements examined. Several areas, including earthquake and flood damage, and office interruption may be inadequate, and additional coverage will be considered when renewing the various CDA insurance policies.

The adequacy of liability coverage was of concern, and coverage has been increased to the following:

General Liability	\$1,000,000
Umbrella Liability	\$4,000,000
Directors' and Officers' Liability	\$3,000,000

Library Services

New library services utilization rates for members and non-members were approved by Executive Council. The rates, which were published in the May issue of the Journal, are effective as of September 1, 1988.

Air Travel — CDA Board of Governors Meetings

Executive Council has been examining ways in which financial resources can be liberated for redirection to emerging priorities. Increased revenue generation and reduction of expenditures are two ways in which this can be achieved.

The Interim and Annual Meetings of the CDA Board of Governors are the largest events which CDA funds. However, the dates of these events are known to all those involved well in advance and, given the competitive nature of the current air travel market, the potential for cost savings in this area is considerable.

The CDA has therefore arranged for Uniglobe Premier Travel Planners Inc. of Ottawa, to act as travel agents for Meetings of the CDA Board of Governors. Uniglobe has been instructed to book the lowest fares available for all attendees whose expenses are funded by the CDA. This applies to all CDA Governors, the Chairman of the Board, and Council and Committee Chairpersons. Convenience of route will be a consideration, as will specific requirements to qualify for reduced airfares, such as the "Saturday night stay-over".

Allocation of Seats — CDA Board of Governors — Affiliate Members

At the 1987 Interim Meeting, the Board approved the principle that each CDA

member be represented only once by a member of the CDA Board of Governors.

The Executive Council expressed concern that the number of affiliate members who are not represented at all by a Board member, is substantial. A policy change allowing for a maximum of one additional (affiliate) voting seat on the Board of Governors of CDA, when the affiliate membership in a province is greater than 250 members was approved by Governors. Affiliate governors will not be entitled to serve as members of the Executive Council.

The appointment of the additional governor will be the prerogative of the President of the CDA in consultation with the provincial corporate body; the appointee must be an affiliate member of CDA.

The Council on Constitution and By-Laws has been directed by the Board to incorporate these changes into the CDA By-Laws.

Appointment of Trustees — Canadian Dental Foundation

At the 1987 Interim Meeting of the CDA Board of Governors, the establishment of "The Canadian Dental Foundation" (CDF) was approved. The Charities Division of Revenue Canada has since approved the registration of the CDF as a Canadian Charity. Incorporation documents have been filed with the Department of Consumer and Corporate Affairs; the applicants for incorporation (CDA Executive Council and Executive Director) are provisional Trustees of the CDF for a term of one year.

The Board of Governors of the CDA is responsible for appointing the Board of Trustees of the CDF; the Trustees so appointed replace the provisional Trustees. Trustees will serve for a term not to exceed two years; a Trustee may serve three consecutive terms of office.

Nominations were solicited from the business community, the dental profession, industry and the academic field.

The following trustees were appointed by the Board:

Mr. Ron Bonar, Vice-President, Corporate Counsel, Colgate-Palmolive Canada

Dr. Arthur Schwartz, Dean, Faculty of Dentistry, University of Manitoba

Dr. Bradley W. Holmes, private dental practitioner and a Past-President of the CDA.

Mr. Don Pamenter, Executive Director, Nova Scotia Dental Association

Dr. Douglas Smith, private dental practitioner and Past-President of the Ontario Dental Association

Dr. John Silver, Head, Clinical Dental Sciences Dept., University of B.C.

Mr. Jardine Neilson, CDA Executive Director (by virtue of position)

Infection Control

In November 1987, Executive Council adopted "Recommendations for Infection Control in the Treatment of Dental Patients (Including those with Hepatitis B, AIDS, and other communicable diseases)". These recommendations were forwarded to the membership, together with a letter from CDA President Markey, addressing related concerns and clarifying CDA's position.

A conference on Infection Control was held in Toronto on February 28-29, 1988. The first day of the conference, which was open to all dentists, auxiliaries, spouses, representatives of the dental industry and invited media guests, featured speakers on a variety of topics including:

- ☐ Infection Control — A General Practitioner's Perspective
- ☐ AIDS — an Overview
- ☐ A Review of AIDS in Canada
- ☐ A Panel Discussion — Legal/Ethical Aspects

Day Two of the conference focused on a review of the CDA recommendations, and development of a statement on the legal and ethical aspects of treatment. Attendance was limited to official representatives of the corporate bodies, CDA Management, selected speakers, and members of the CDA Committee on Health Care.

Revisions to the CDA Infection Control Procedures and a Statement on the Ethical and Legal Considerations of Treating Patients with Infectious Diseases developed at the Conference were approved by the Board. Direction was given that Dr. John Hardie and the Health Care Committee develop additional background information on infection control, designed to provide the dental practitioner with practical "how to" information.

The Role of Auxiliaries in Dental Health Care Delivery Systems

A CDA statement on Dental Hygiene is being prepared. Executive Council has reviewed a draft of the statement, which comprises a Background Statement on the Concept of an Oral Health Care Team, Important Principles in the Definition of the Working Relationship of the Dentist and Dental Hygienist, and, Practical Arrangements for Supervision of Hygienists. This latter portion of the statement is being developed presenting definitions of types of supervisory arrangements that may be employed at the discretion of the dentist, including "immediate supervision" and "direction". The draft statement will be circulated to all corporate bodies for comment prior to the June Executive Council Meeting. During discussion of the role of auxiliaries in dental health care delivery systems, the Executive Council stressed the need to preserve the integrity of the dental team and improve communication among the component parts.

The Board will be kept informed of developments.

Geriatric Dentistry

Governors were informed of the actions of Executive Council with regard to Geriatric Dentistry. Input was solicited from a wide range of dental community members on what CDA's role should be in this matter.

In general, respondents believe that CDA should demonstrate leadership in assisting the dental profession to respond effectively to new challenges associated with geriatric dentistry.

While several suggested the creation of a special advisory council or distinct standing committee, most indicated that existing CDA structures should be utilized to provide the required leadership, through initiatives such as the following:

- ☐ The CDA Council on Education and Accreditation influencing dental schools to reflect necessary educational dimensions of geriatric dentistry.
- ☐ The CDA Committee on Continuing Education, in particular, identifying special needs and encouraging responses by dental education.
- ☐ The Council on Hospital and Institutional Services establishing guidelines and resources for institutional dentistry as institutional dentistry is faced with the need to serve the aging population.

- ☐ The Council on Health Care developing similar resources for the general dentist.
- ☐ The CDA Library establishing a data bank on problems and resources related to geriatric dentistry.
- ☐ The CDA Dental Awareness Program placing special emphasis on geriatric dentistry.
- ☐ CDA Information Services publishing brochures on geriatric dentistry.
- ☐ The CDA Journal publishing special articles on geriatric dentistry.

The Executive Council agreed that education and information dissemination would be the major thrust of CDA, and has directed the above noted bodies to pursue the initiatives indicated. The Board will be kept informed on developments through regular reporting mechanisms.

Education and Accreditation — Task Force on Future Planning

Executive Council reviewed a discussion paper prepared by Mr. Brian Henderson, Director of Education and Accreditation, on "The Concept of a Commission on Accreditation".

Accreditation standards are currently controlled by the CDA Board of Governors, while the accreditation process (the evaluation of programs against standards) is under the control of the Council on Education and Accreditation.

Processes of accreditation and licensure must visibly demonstrate that they are related to public interest as distinct from professional self-interest. The Canadian Dental Association is concerned with the latter, but is also concerned that the public interest initiatives it has already developed be sustained, including the accreditation process.

The Executive Council requested that the Task Force on Future Planning of the Council on Education and Accreditation consider the development of terms of reference for two separate CDA Councils — a Council on Education and a Council on Accreditation. The intent would be to develop the Council on Accreditation as an autonomous body, supported by CDA and protected by the CDA Constitution. Such a Council on Accreditation could deal with and control *both* accreditation standards and processes. It would not require its decisions to be ratified or approved by the CDA Board of Governors, and it would not be assigned an executive liaison. Its composition should

reflect the constituencies involved and legitimately concerned with accreditation, including CDA, the licensing bodies, NDEB, ACFD, dental auxiliaries and the public.

The Task Force met in early January to pursue its terms of reference: the reexamination of the purposes of accreditation and related quality assurance initiatives, and the structure, processes and resources required to achieve these purposes. The Executive Council request was considered during these deliberations. A discussion paper developed at that meeting is being given wide circulation for input purposes. Final recommendations will be presented to the Board through the report of the Council on Education and Accreditation.

CDA Priorities

At its 1987 Planning Session, Executive Council reviewed current priorities and identified those new issues which will require heightened emphasis.

In preparation for this annual priority setting exercise, CDA President Dr. Ron Markey communicated with a wide range of the components of the dental community, seeking input on national priorities and issues that the Canadian Dental Association should address. The response received was encouraging, and provided the Executive Council with specific points of view on areas which impact on the future of dentistry. It also served to heighten CDA's awareness of its role through both direct action, and support of the objectives of others in the organized dental community. Insight on "seeing CDA as others see it" is an invaluable component of an annual review process; all contributions were welcomed, considered and appreciated.

Strategic Planning, Communications, Alternate Delivery Systems, Infection Control, Professional Resource Utilization, Government Relations, the Role of Auxiliaries in Dental Health Care Delivery Systems, Membership, Dental Awareness, Education and Accreditation, and Conventions were identified as major priorities.

Strategic Planning

Refinement of the CDA's strategic planning process is an ongoing priority. The Executive Council directed that funding of ongoing priority activities, and flexibility to act swiftly to meet newly-emerging needs are, in themselves, high priorities. CDA's dual role in promoting the inter-

ests of the public and the profession is of utmost importance in the priority-setting process. Revenue generation must play a key role in meeting this goal. Corporate sponsorship, continuing education seminars, and Journal advertising are among the issues to be reviewed in this regard. The actual costs of councils and committees, including staff support costs, will be determined. Chairmen have been asked to review their respective areas of activity and identify short and long term goals for revenue generation.

Communication

Enhanced communication with the membership, the public and government is required. Media relations is a principal component of any communications network; the manner in which CDA manages its media relations activities was reviewed by Executive Council at the November Planning Session. Since then a review has been carried out of the roles of spokespersons and resource people. Wider utilization of Executive Council, the President and his Management Committee, and the Executive Director as spokespersons in critical issue areas, is indicated. Media training for these individuals will commence shortly, and will be conducted on an ongoing, as needed basis. A policy handbook on critical issues is being prepared.

Increased visibility before the profession is essential. Budgetary provision has been made to allow communication on essential issues. The Journal will give increased coverage to activities of Councils and Committees, in the interest of keeping the membership informed of activities performed to its benefit.

Specialty Certification in Canada

Executive Council reviewed a letter received from Dr. R.L. Moran, President of the Royal College of Dentists of Canada concerning specialty certification in Canada. Dr. Moran's letter addresses the need for a national standard for specialty practice, and petitions the CDA to take a leadership role in bringing together all appropriate parties to pursue this goal. The CDA Committee on Dental Specialties supports the development of a forum to review a linked standard of specialty certification on a national basis. Matters under review by the Task Force on Future Planning of the Council on Education and Accreditation relate to certification, and the Board was informed that the Task Force will pursue discussion and investi-

gation of the concerns expressed by the RCDC.

1988 Participation Agreement

In October 1987 the 1988 Participation Agreement was forwarded by CDA to all co-sponsors of CDIP. The 1988 Agreement contained amendments approved at the 1987 Annual Meeting of the CDA Board of Governors related to the dispo-

sition of surplus funds. The QDSA indicated disagreement with the amendments to the 1988 agreement. The provision for utilization of surpluses accrued in the past to the benefit of dentists other than those who contributed to their creation, and the timely distribution of surpluses to those who did contribute to their creation, are at issue. The QDSA and CDA have signed a 1988 agreement which



Enjoying an interlude prior to the Government Relations dinner, were, from the left: Drs. R.D. Sandilands, Peace River, Alberta (CDA Board of Governors); V.H. Jones, President, Alberta Dental Association; Bryun Sigfstead, Executive Council member — Alberta; Gilles Dubé, Executive Council member — Québec, and G.R. Sandercock, Board of Governors — Alberta.



At the Government Relations dinner held Thursday, March 24 at the Four Seasons Hotel, Ottawa, Dr. Jack Gryfe, left, Chairman of CDA's Government Relations Committee, and CDA President, Dr. Ron Markey, right, chatted with the guest speaker, Mr. Peter Connolly, Principal Secretary to federal opposition leader, the Rt. Hon. John Turner.

conforms to the 1987 Participation Agreement. Discussion between CDA and QDSA on this issue is ongoing.

Liability Insurance

Recent legislation passed by the legislative Assembly of the Province of Quebec covers the issue of professions self-insuring for liability purposes. The Order of Dentists of Quebec is currently considering this possibility, under this legislation.

The Chairman of the CDA Council on Insurance and Investment was asked by Executive Council to attend a meeting convened by the ODQ to discuss the pertinence and practicality of the Order establishing a self-insurance system to provide malpractice coverage to dentists practising in the Province of Quebec. This meeting was held on March 28, 1988.

Discussion has been initiated with the Royal College of Dental Surgeons of Ontario concerning liability coverage through CDIP. As a result of an initial meeting, the CDA and the RCDS have agreed to participate in a joint working group aimed at exploring all aspects of liability insurance for dentists in Canada. Its mandate will be to review the plans in effect for the two groups, evaluate strengths and weaknesses, and report on a regular basis to the RCDS and the CDA regarding progress. Executive Council feels that unity in the field of liability coverage would benefit all dentists in Canada, and it intends to work towards this goal.

CDA Awards

The Executive Council has granted the Award of Merit to Dr. John Christie, Dr. Edward Allison and Dr. Yosh Kamachi. Certificates of Merit have been awarded to the following colleagues who have served the CDA in various capacities over the recent years:

Dr. Gordon Anthony
Dr. Ralph Barolet
Dr. Gordon Nikiforuk
Dr. William Sturtridge
Dr. John Speck
Dr. Bruce Jackson
Dr. Robert Turnbull
Dr. George Beagrie
Dr. Gerry MacFarlane
Dr. Roger Porter
Dr. Keith Hamilton
L.-Col. Peter McQueen
Dr. John Rooney
Dr. Ken Skinner
Dr. Jack Gryfe

Consumer Products Recognition

Dr. Michael Eggert, Chairman of the Committee for Consumer Products Recognition presented recommendations to the Board seeking authorization to pursue the development of guidelines for non-fluoride containing anti-caries agents, and investigation of the development of a recognition program for non-dental products containing sugar substitutes.

Governors approved these recommendations; further developments on these matters will be reported at future meetings of the Board.

The Committee has been made aware of several anecdotal cases of individuals being sensitive to tartar control toothpastes when they have no reaction to the regular formula. A letter has been sent to each of the manufacturers to confirm their awareness of, and action being taken with regard to these reactions. The Committee intends to submit an article to the Journal requesting that dentists notify the CDA when they become aware of such cases. CDA staff will then keep Health Protection Branch of Health and Welfare Canada informed.

1988 CDA Convention — Edmonton

Dr. Herb Link, Chairman of the 1988 CDA Convention reported to the Board on the ongoing activities of his Committee. The Convention, to be held August 21-24, will offer free registration to all Alberta dentists, as an ADA Continuing Education event. A stimulating scientific program is in place, and social activities second to none are planned, and eagerly anticipated. The message to all CDA members is "Congregate in 88".

Government Relations

The Government Relations Committee has reviewed CDA's role regarding government incentive geriatric dental care programs. As health care remains a provincial prerogative, and programs of this specific nature will be most effectively produced by interaction of provincial governments and provincial dental associations, the Board approved recommendations confirming CDA's role as one of support of these negotiations as required.

Following review of a 1987 organ donor program co-sponsored by the Canadian Medical Association, the Pharmaceutical Manufacturers Association of

Canada and Health and Welfare Canada, the CDA has decided to initiate a program of information and incentive, directed towards the dentists of Canada. Because April 24 through April 30, 1988 has been officially designated "National Organ Donor Awareness Week", the April 1988 issue of the Journal of the Canadian Dental Association included information co-sponsored by CDA and Health and Welfare Canada, and a number of tear-out Organ Donor Cards supplied by PMAC.

A Government Relations Dinner was held on Thursday, March 24 in the Rideau Room of the Four Seasons Hotel, Ottawa. Mr. Peter Connolly, Principal Secretary to the Leader of the Opposition was the featured speaker.

Health Care — Guidelines/Statements

On recommendation of the Committee on Health Care, the Board approved Guidelines for the Control of Radiation in the Dental Office, and a Statement on Treating Patients with Joint Prostheses. These documents will be published in a future edition of the Journal.

The position paper, Principles Governing General Anaesthesia, has been referred to the Committee for redrafting.

Membership

Early in 1987, a survey of dentists' perceptions of the value of CDA membership was conducted.

The survey report confirmed suspicions held by the Membership Committee in a number of areas. Among the observations were that recent graduates were not maintaining membership in the organization after their student years, and dentists hold a variety of attitudes towards membership in the CDA; some look for a strictly professional organization, while others seek "value for their dollar". Another observation was the need to improve the communication between CDA and the dentist population, not only to announce programs and services offered by the Association, but to maintain an ongoing communication link. It was also interesting to note that of 100 dentists who had not renewed their CDA membership, 27 thought they were still members of CDA.

The results of the report will be used in formulating the 1989 and subsequent membership campaigns. In addition, the Committee will actively pursue the

development of new membership services aimed at providing value for membership dollars.

Publications

In presenting the report of the Publications Committee, Chairman Dr. John Hardie highlighted Journal activities. During the first three months of 1988, the Journal had undergone an extensive review to improve both the readership and design of the publication. Commencing with the January issue, the following changes were introduced:

- ☐ A colourful and graphically appealing cover will be sought each month.
- ☐ Both the Editorial and the President's columns will be designed to be more noticeable and easier to read.
- ☐ The typeface will be darker and larger for greater reading ease.
- ☐ The table of contents page will be redesigned to allow for ease of reference.
- ☐ The list of officers will be better laid out for ease of reference.
- ☐ There will be greater use of screens and colour.

Over the past year, the Journal received considerable criticism on its publication of materials judged to be politically sensitive by segments of the membership. While it is believed that the Journal should be a forum for debate and discussion, all articles scheduled for publication will be reviewed by the Committee on a quarterly basis to ensure that they meet the standards of a professional Journal, and are presented in a manner that achieves a balanced perspective on issues.

Sales Tax Reform

The Federal Government proposes to initiate a federal sales tax on dental services provided by an individual dental practitioner, or a professional corporation, when these services are not funded by government or not for profit sources. Needless to say, this proposal causes great concern to the dental profession and dental patients in Canada.

The Taxation Committee will address these concerns through the following activities:

- ☐ Presentation of a CDA position paper to the Minister of Finance.
- ☐ Encouragement of Canadian dentists to write their MPs and the Minister to express their individual concerns.

- ☐ Development of a patient lobby designed to facilitate patients expressing opposition to a sales tax on dental services.

Members should watch for a direct communication from the Taxation Committee when their support on these initiatives is required.

1987 AUDITED FINANCIAL REPORT

The audited financial statements of the Canadian Dental Association were adopted at the Interim Meeting of the CDA Board of Governors. The Balance Sheet and Statement of Revenue and Expenses for the year ended December 31, 1987 have been extracted from the Auditors' Report and are presented for your review. Copies of the complete audited statements as prepared by McCay, Duff and Company may be obtained from the CDA Resource Centre.

CANADIAN DENTAL ASSOCIATION BALANCE SHEET AS AT DECEMBER 31, 1987

ASSETS		1987	1986
CURRENT			
Cash	\$	499,036	\$ 417,179
Cash — Building Contingency Fund		6,852	2,674
Investments		1,190,568	495,390
Accounts receivable		167,019	53,095
Inventory		57,022	41,210
Prepaid expenses		65,807	23,152
		<u>1,986,304</u>	<u>1,032,700</u>
FIXED		<u>1,287,470</u>	<u>1,369,829</u>
		<u>3,273,774</u>	<u>2,402,529</u>
TRUST ASSETS			
Cash		33,673	46,910
Accounts receivable		41	302
Prepaid expenses		8,010	7,876
Library books and furniture (at nominal value)		1	1
		<u>41,725</u>	<u>55,089</u>
		<u>\$3,315,499</u>	<u>\$2,457,618</u>
LIABILITIES			
CURRENT			
Accounts payable	\$	264,361	\$ 95,656
Deferred revenue		976,978	284,912
Current portion of long-term debt		27,000	27,150
		<u>1,268,339</u>	<u>407,718</u>
LONG-TERM DEBT		<u>441,337</u>	<u>468,337</u>
		<u>1,709,676</u>	<u>876,055</u>
EQUITY			
SURPLUS		744,966	652,132
EQUITY IN FIXED ASSETS		819,132	874,342
		<u>1,564,098</u>	<u>1,526,474</u>
		<u>3,273,774</u>	<u>2,402,529</u>
TRUST EQUITY			
Library Trust Fund		34,483	48,242
The Grieve Memorial Lectureship Fund		7,242	6,847
		<u>41,725</u>	<u>55,089</u>
		<u>\$3,315,499</u>	<u>\$2,457,618</u>

Approved on behalf of the Board:

President

Executive Director

Revision to the CDA Uniform System of Codes and List of Services

Following the 1987 Annual Meeting, the Third Party Dental Plans Committee received extensive comments on the CDA Uniform System of Codes and List of Services, which had been approved by the Board of Governors. Due to extensive changes made to the approved document, the Uniform System of Codes and List of Services was presented to Governors for re-examination and approval. The revised document received Board approval for implementation throughout Canada on January 1, 1990.

Dialogue in Dentistry

Governors approved recommendations from the Third Party Dental Plans Committee for development of a Dialogue in Dentistry Program in Canada. Subject to the approval of the provinces which contributed to the fund, surplus monies of the Public Information Campaign will be utilized for start-up costs. Funds remaining will be used to translate and produce copies of the Consumers' Guide to Dental Health, which will be made available to the corporate bodies that contributed to the fund.

Direct Reimbursement

An information package on Direct Reim-

bursement, an alternative to traditional dental plans such as the indemnity, or administrative services only type, offered by dental carriers, was presented for Board approval.

The package is an important alternative to offer, particularly to small companies, and is a very useful design to augment existing fee-for-service plans.

Governors approved the Direct Reimbursement Package for promotion by the Canadian Dental Association.

Workshop — "Dental Plans — Our Shared Concerns"

A workshop for representatives of dentistry and representatives of the dental insurance industry in Canada is planned by the Third Party Dental Plans Committee. The workshop would provide an opportunity for carriers and dentists to discuss problems facing fee for service dentistry, from the perspectives of all parties in dental delivery.

The Board authorized the Committee to proceed with the organization of the workshop, subject to final budgetary approval by Executive Council.

Professional Resource Utilization

The Deans of Canadian Dental Faculties have indicated plans for enrollment reduction through to the 1989-90 aca-

demic year. An overall reduction of 16.7% and 23.8% over 1986-87 statistics, for the 1988-89 and the 1989-90 terms respectively were projected. The figures for 1988-89 are probable and those for 1989-90, are possible. If the reductions occur as indicated, and the attrition rate remains at 4-5%, the overall reduction will be close to 30%, the original target of the Professional Resource Utilization Committee.

The ongoing necessity for data collection and analysis of trends in dental school enrollment and the demands for dental services, is recognized. A program for data collection developed at the University of Minnesota is being considered for possible Canadian adaptation. It is anticipated that a proposal on this issue will be presented to Executive Council in June.

Council/Committee Structure

The Roles and Responsibilities Committee has completed its review of the CDA Council and Committee structure, as directed by the Board. Recommendations were based on definitions previously approved by Governors, which considered criteria such as regional representation, protection of the Constitution and By-Laws, and flexibility as to change in composition.

The Board approved the following revised structure:

COUNCILS:

Executive
Education and Accreditation
Insurance and Investment
Constitution and By-Laws

COMMITTEES OF THE BOARD OF GOVERNORS:

Ethics
Health Care
Hospital and Institutional Services
Information Services
Student Affairs

COMMITTEES OF EXECUTIVE:

Convention
Consumer Products Recognition
Dental Materials and Devices
Dental Specialties
Government Relations
Nominations, Awards and Trusts
Management
Membership
Publications
Salaried Dentists
Taxation
Third Party

CANADIAN DENTAL ASSOCIATION STATEMENT OF REVENUE AND EXPENSES FOR THE YEAR ENDED DECEMBER 31, 1987

	1987		1986
	BUDGET	ACTUAL	ACTUAL
REVENUE			
Executive	\$ 2,450,364	\$ 2,548,490	\$ 2,146,958
Education and Accreditation	213,175	215,970	249,872
Communications	650,300	542,245	591,792
Administration	285,390	349,294	273,327
	<u>3,599,229</u>	<u>3,655,999</u>	<u>3,261,949</u>
EXPENSES			
Executive	801,510	792,224	824,046
Education and Accreditation	422,981	434,793	354,600
Communications	1,445,139	1,428,968	1,520,158
Administration	934,736	962,390	867,146
	<u>3,604,366</u>	<u>3,618,375</u>	<u>3,565,950</u>
EXCESS OF REVENUE OVER EXPENSES (EXPENSES OVER REVENUE) FOR THE YEAR	<u>(\$ 5,137)</u>	<u>\$ 37,624</u>	<u>(\$ 304,001)</u>

The Council on Constitution and By-Laws was directed to incorporate this policy in the CDA By-Laws.

CDA Certification Program for Dental Materials and Devices

The Council on Dental Materials and Devices maintains that a Canadian certification process for dental materials and devices is required, and feels that this could be accomplished using ISO standards. Following receipt of legal opinion, it is felt that such a process could be established, without CDA incurring legal liability. The principal obstacle to establishing a certification process is availability of funds.

A sub-committee consisting of Drs. Ralph Barolet and Derek Jones, and Mr. Brian Henderson, has been struck to define the elements of the certification process, investigate funding sources, examine CDA's role in the overall process, and report to Executive Council.

CDA Patient Information System

Over the past year, the Council on Information Services has discussed the subject of revamping CDA's current pamphlet program, and supporting it with new fact sheet pads, as the basis of establishing patient information centres in dental offices.

The Board approved a sponsored patient information system; pamphlets would be corporately funded; fact sheets would be CDA funded.

Targeted Programming

A number of targeted programs continue to be implemented under the umbrella of the Dental Awareness Program.

One of the most successful targeted programs to date is CDA's First Teeth Program under the sponsorship of Colgate Junior. Colgate-Palmolive has committed \$1.5 million to a multi-faceted three year program geared to parents of children ages 2-9. An aggressive marketing campaign has been initiated. To date, over 11,000 requests have been received from the profession for samples of the First Teeth Kit.

Student Insurance Package

The Council on Insurance and Investment presented a proposal for a new free Student Insurance Package. The recommendation was based on the demonstrated success of the Grad Package and the

projected benefit to CDIP in enrolling more students, early in their student years. The following package was approved by Governors, subject to students maintaining CDA memberships:

Dental Studies Year

FIRST

All students who are members of the CDA and/or ODA receive \$10,000 of Basic Life Insurance upon completion of an acceptance form.

SECOND

All students who maintain the first year coverage by paying the premiums, automatically receive another \$10,000 free.

THIRD

All students who maintain the \$20,000 coverage by paying the premiums, automatically receive another \$10,000 free.

GRADUATING

Upon acceptance of the Grad Package, the graduate would then possess \$80,000 of Basic Life, while paying for \$30,000.

CDSPI 1988 Marketing Plan

The CDSPI Board of Directors reviewed the CDSPI marketing plan for 1988, and information on the plan was presented for the Board's information. In reviewing this information, the Board directed that additional recognition of CDA and the Corporate Bodies that are joint owners of CDIP, be provided. Δ

Members of the CDA are invited to contact the Association if further information is required on any of the above items. Members are reminded that proceedings of the Interim and Annual meetings of the CDA Board of Governors are published annually as the CDA Transactions. Copies are available in the Fall of each year, and are free of charge to members.

CDA Retirement Savings Plan

Unit values: (Funds are valued weekly)

Fund	Unit values as at	
	April 30, 1988	March 31, 1988
<i>Fixed Income Fund</i>	60.19975	60.84852
<i>Common Stock Fund</i>	13.63701	13.26543
<i>Money Market Fund</i>	40.27279	39.99201
<i>Balanced Fund</i>	24.80281	24.68686

Interest rates:

Guaranteed Fund

Term	*Interest rates as at	
	April 30, 1988	March 31, 1988
1 yr	9.15%	8.70%
2 yr	9.35%	9.10%
3 yr	9.65%	9.35%
4 yr	9.80%	9.60%
5 yr	10.10%	9.85%

(*rates subject to change without notice.)

Total Assets (Market value) of the Plan as of:

April 30, 1988	March 31, 1988
\$93,768,226	\$91,771,822

For further information:

Write:

CDSPI

Retirement Services Dept.
Suite 600
2 Lansing Square
Willowdale, Ontario
M2J 4Z3



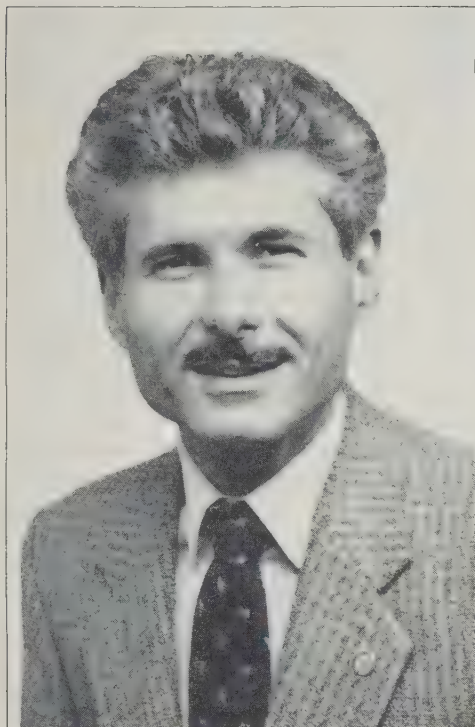
CDA RSP

or phone, toll-free:

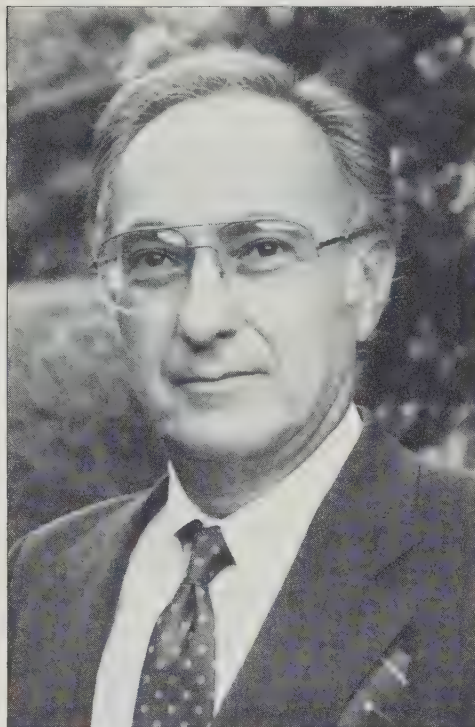
Western and Atlantic Canada
and Ontario Area Code 807
only 1-800-268-5418
Quebec and Ontario, (except Area
Code 807) 1-800-268-3411
Metro Toronto Area 497-7117

Canadian Dental Association Convention

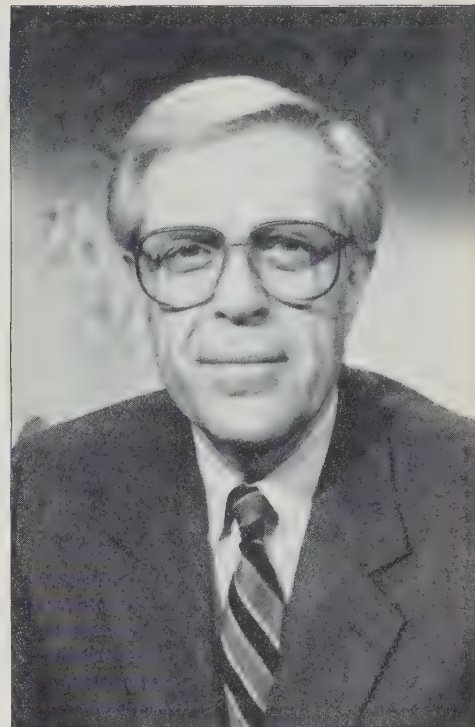
Congregate in '88



Dr. James Cottone



Dr. William Becker



Knowlton Nash

Of particular significance are the Pre-Convention limited attendance courses being offered on Saturday, August 20 and Sunday, August 21.

Outstanding speakers and authorities in their fields, will present.

On Saturday, **James Cottone**, DMD, MS, will speak on "Infection Control and Dentistry: The Challenge of Hepatitis and AIDS."

Dr. Cottone is Professor and Acting Head, Division of Oral Diagnosis and Oral Medicine, Department of Dental Diagnostic Science, University of Texas Dental School at San Antonio.

In the area of infection control, Dr. Cottone presents more than 50 programs a year, internationally.

He also takes a leading role in forensic dentistry and is director of the largest U.S. education program on that subject. Dr. Cottone was on the teams which exhumed and identified the body of Lee Harvey Oswald in 1981 and identified the remains in the Pan Am crash in New Orleans (1982) and the Delta Airlines crash at DFW Airport (1985).

He is consultant to the American Dental Association on (1) Council on Dental Therapeutics in Diagnostic and Forensic Dentistry: Hepatitis and AIDS, and, (2) Council on Dental Education, Commission on Dental Accreditation.

Regarding the topic of his presentation, Dr. Cottone states that "practical infection control is being adopted by the dental profession in order to combat the threat of Hepatitis, AIDS and other infectious diseases to the health of the dentist, dental staff and patients. Each of the following six areas of infection control will be independently discussed during this program: patient screening, personal protection, instrument sterilization, surface and equipment disinfection, aseptic technique and laboratory asepsis. The emphasis will be on technique selection and product evaluation. A review of the currently available infection control guidelines will be included. Handouts appropriate for a dental office infection control manual will be available.

On Sunday, **Dr. William Becker** will speak on "Changing Concepts in Peri-

odontal Therapy: Scaling and Root Planing Isn't Enough."

Dr. Becker, who conducts a private practice in Tucson, Arizona, has teaching appointments at the University of Southern California School of Dentistry and at the University of Michigan. He has done several clinical studies relating to guided tissue regeneration.

His presentation will cover diagnosis of periodontal diseases, a simplified method for periodontal charting and the role of scaling and root planing in the periodontal treatment plan.

Recent research has shown that it may be possible to detect periodontal diseases using various diagnostic tests. The relevance of these tests to the dental practitioner will be discussed. There will also be an opportunity to discuss surgical procedures which are necessary for restorative dentistry.

Dr. Becker's afternoon session will be devoted to discussion of periodontal maintenance, the role of anti-microbials in periodontal therapy and periodontal regenerative procedures. The presenta-

tion will be enhanced by dual projection audiovisual slides. A simplified periodontal chart will be given to attendees.

A Monday highlight

One of the highlights of the Monday, August 22 program will be The Murray McDonald Memorial Lecture, sponsored by the Canadian Fund for Dental Education.

Knowlton Nash, until recently anchor-

man for the CBC-TV nightly newscast "The National" has accepted the invitation to speak. His topic will be "History on the Run."

Law and practice management

Two other presentations of major interest on Monday, will be on Dentistry and the Law, by **Raymond C. Purdy**, member of a prominent Edmonton law firm and "Front Office Personnel" by **Jennifer de**

St. Georges, an internationally recognized practice management educator.

Ms. de St. Georges has been in dentistry since 1965 and on the lecture circuit since 1972. She has developed a solid reputation for providing the 'nuts and bolts' of management in a highly motivating, practical yet entertaining manner. Her speaking engagements abroad include those in England, Canada, Singapore and Mexico.

She is president of the de St. Georges & du Moulin Practice Resource Center of San Francisco as well as Jennifer de St. Georges & Associates of Monte Sereno, California.

Raymond C. Purdy, a graduate of the Faculty of Law, University of Alberta, has been a sessional instructor for the Legal Education Society of Alberta and an instructor of the Legal Education Society/ Continuing Legal Education Course, in May 1986.

He has practised extensively in the area of civil litigation and has a keen interest



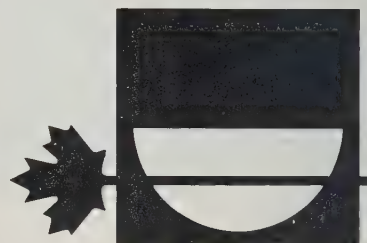
Ms. Jennifer de St. Georges



Mr. Raymond C. Purdy



The Shumka Ukrainian Dancers

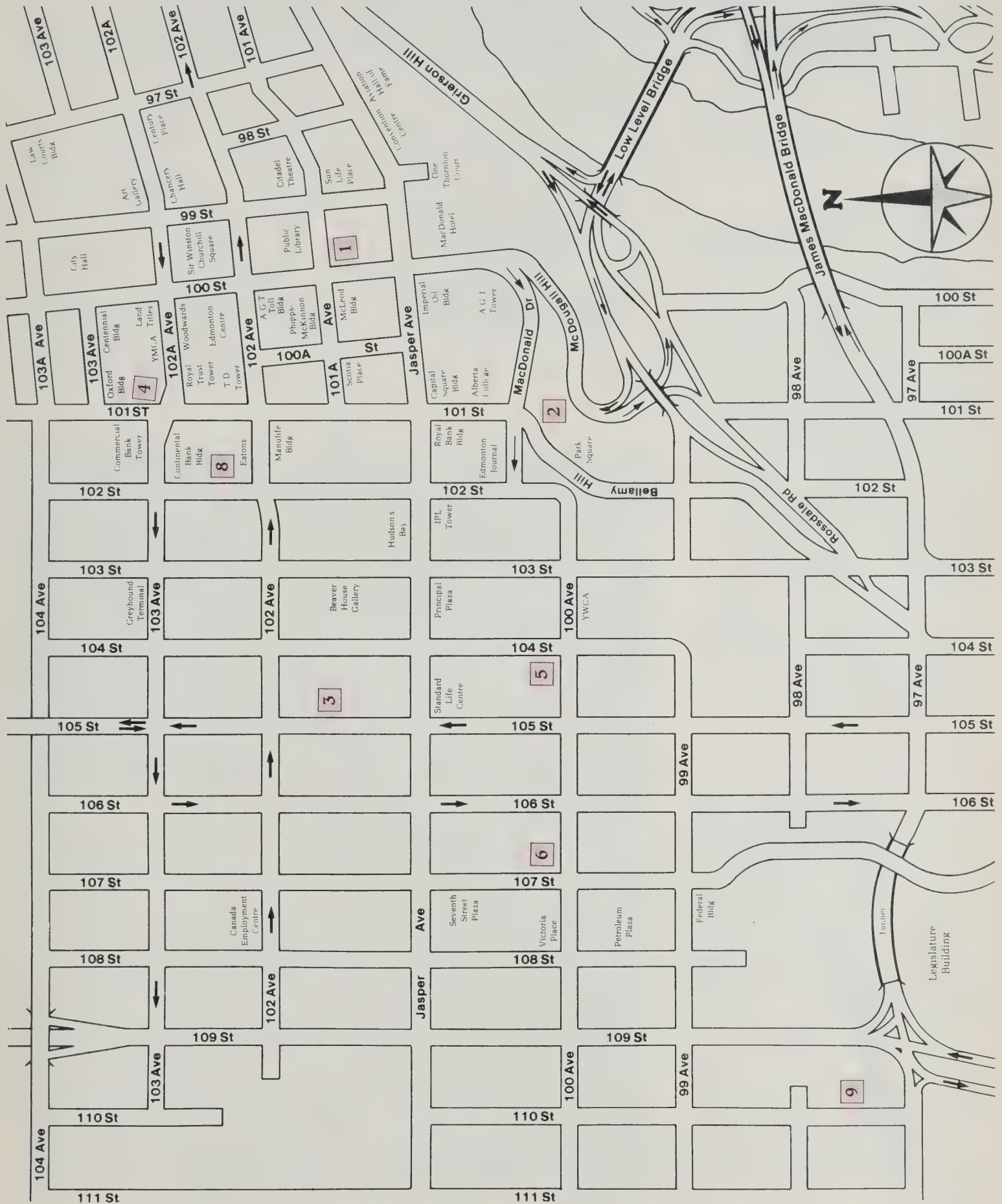


LOCATION OF HOTELS

(See Map Opposite)

- 1 **Westin Hotel**
(CDA headquarters)
- 2 **Chateau Lacombe**
(CDHA & CDAA Headquarters)
- 3 **Ramada Renaissance**
(Exhibitors' and Technicians' Headquarters)
- 4 **Four Seasons**
- 5 **Sheraton Plaza**
- 6 **Holiday Inn**
- 7 **Fantasyland Hotel**
(at West Edmonton Mall — beyond scope of this map)
- 8 **Centre Suite**
- 9 **Tower on the Park**

MAP OF DOWNTOWN EDMONTON





in the area of dental malpractice, which now forms a majority of his civil litigation practice. He has been defence counsel in many dental malpractice lawsuits, which included issues of informed consent, full mouth reconstruction, TMJ dysfunction, extractions of lower molars and resulting complications.

His presentation is entitled: "Legal Perspectives in the Practice of Dentistry."

Social program

The Convention begins on a healthy note with "Fun Runs" on the morning of Sunday, August 21. There will be two events one, measuring 3.1 kilometres for the whole family, and the other is an adult road race, over 6.2 kilometres. The course will be along the North Saskatchewan River Valley in the vicinity of the University of Alberta campus.

The **Registration Roundup** on Sunday evening, August 21, will start things off with a fun filled night at the Edmonton Convention Centre. Enjoy live music, hors d'oeuvres and drinks. The highlight will be provided by the internationally renowned **Shumka Ukranian Dancers**. This high energy, colorful dance company has entertained heads of state around the world and gathers rave reviews wherever it gives a performance. It has been said that the aptly named Shumka (Whirlwind) Dancers rank as a national artistic treasure – on a level with the National Ballet of Canada.

The **Western Night** program, on Tuesday, August 23 promises to be a



Bobby Curtola

memorable event in the true spirit of Edmonton. First, there's a feast of superb western barbequed beef, with all the trimmings. Entertainment will be provided by Klondike Kate and her professional song and Can Can Troupe, reminiscent of the Gold Rush days.

Then, the major attraction will be singing star **Bobby Curtola**, and his Show-band. Curtola, the enduring entertainer who is now a regular in Las Vegas, began his career in his high school in Thunder Bay, Ontario. His break came with the hit recording of "Hand in Hand with You" and his appearance on the Bob Hope Show in 1960. He was the first Canadian to achieve a gold album – a million seller. One of the most familiar peaks in his career was a single jingle that sounded like a hit recording – "Things go better with Coke."

Spouses and children's program

Specialty programs have been planned for spouses and children (recommended for ages 5-14). Highlights of the spouses' program include luncheon and shopping at the world-famous West Edmonton Mall, a Family Fun Brunch and High Tea at the Muttart Conservatory.

The children's program features a tour of the zoo, space science centre and Fort Edmonton Park, plus the Family Fun Brunch.

Exhibits

The exhibit area in the Edmonton Convention Centre promises to be a feature of major interest. More than 160 booths have been sold, offering a wide range dental products and services.

LIBRARY SERVICES

Commencing September 1, 1988, the following charges will be levied for services available from the Sydney Wood Bradley Memorial Library.

Service	Member	Non-member
MEDLINE Searches	Free	\$10.00 flat fee plus the search cost
All Photocopies*	\$5.00 for the first 10 articles; 10 cents a page thereafter	\$5.00 flat fee plus 10 cents per page
Monthly SDI	Free	\$30.00 per year
Package Library	\$5.00	\$10.00
Table of Contents	Free	\$5.00
General Inquiries	Free	Free

*Requests for articles from other libraries do involve extensive costs so these will be passed on to the user as they occur.

Over the years, the Sydney Wood Bradley Memorial Library of the Canadian Dental Association has provided a variety of library services at no cost to CDA members. However, the demand for these services has escalated and so too have the costs. Consequently, in order to maintain both the quality and variety of services to which CDA members are accustomed a small service charge must be levied.

We feel that the above schedule is both reasonable and competitive with those of other libraries and resource centres. In addition, charges have been structured to the advantage of the CDA member.

The Sydney Wood Bradley Memorial Library is appreciative of the support it has received from the dental profession over the years and looks forward to continuing this tradition of service in the future.

Should you require additional information on these changes, please don't hesitate to contact the library at: 613-523-1770 extension 223.

Bob and Keep Smiling

. . . on the best seller list

With the introduction of **Bob** and the **5 Point Prevention Plan**, your enthusiasm for *Dental Health Month* has grown greater than ever.

The numbers tell the story of the remarkable and galvanizing success of this year's theme. Sales of *Dental Health Month* materials to the end of March surpassed \$67,000 — and, as of this writing, were still coming in. This represents an increase of almost 60 per cent in revenues from 1987 and a 145 per cent increase from 1986.

This spectacular rise in awareness and participation is due, in large part, to the warm, engaging feel of **Bob** and the **5 Point Prevention Plan**. Together, they express the appeal of a healthy smile, and they help to convey an active, educational message to the public.

This year — with the addition of bumper stickers, balloons, table talkers and wallet cards to the standard offering of posters, buttons and stickers — we have provided the widest selection of educational materials ever. The new items have opened up fresh opportunities for effective in-office patient education, and have enabled community organizers to dress up and stock their booths in more ways than ever before. Your response to these new items has been terrific.

We have also expanded our marketing efforts. This year for the first time, *Dental Health Month* materials were made available directly to you through the order form in the January Journal. It allowed you to order supplies for your individual practices. The materials will, of course, remain available through the CDA's catalogue of materials, *Don't Leave Your Patients in the Dark*, throughout the year.

To help us review this year's activities, it would be a great help if you could write us at the CDA and tell us about the events

Keep Smiling



How to.

you held, the materials you found the most useful and why, and what you might like to see developed for the coming year.

With the success of **Bob**, it looks like he may become the star of *Dental Health Month* for years to come. Let's work together to build on our achievements!

. . . and in the magazines

The May edition of **Canadian Living** and **Coup de Pouce**, and the April 18th edition of **Time** featured the launch of the *Keep Smiling* print ad. Shown opposite, the ad helped to introduce the **5 Point Prevention Plan's** positive dental health message to Canadians nationwide.

This ad is a dynamic new edition to the association's public service ad campaign. Plans are underway to develop this tremendous media opportunity more fully in the future.

Space for this initial placement was generously donated by Colgate-Palmolive.

Communication . . . a daily concern

A successful patient communication program means providing quality information materials to your patients . . . every day.

Attitudes toward dentistry and dental health are often formed in large part by individual experiences with the dental team. Your team must actively educate and motivate patients — not only by providing care, but by communicating care.

A well-informed patient is a better motivated patient. Enhanced awareness will help your patients make a real commitment to preventive oral care and to getting the most out of *your* professional services.

Office communication is an important, but often overlooked, part of patient education — it tells your patients that you care. Having helpful, useful materials in the office — on the walls and available to hand out — demonstrates your interest in your patients even when they are not in the chair. You should take every advantage during the course of a visit to communicate with your patients. Remember, you only see them for a few hours each year.

Keep a good stock of patient information materials on-hand at all times. It's important!

To order your supplies, write to the CDA's Order section and ask for their '88 catalogue *Don't Leave Your Patients in the Dark* — it provides a complete run-down of what the CDA has to offer and an easy-to-use order form on the back:

CDA Order Section
1815 Alta Vista Drive
Ottawa, Ontario
K1G 3Y6.

Or phone in your orders (Visa or MasterCard necessary) to the *Order Section* at (613) 523-1770. Δ

1988 CANADIAN DENTAL ASSOCIATION CONVENTION

(hosted by the Alberta Dental Association)

AUGUST 21 to 24, 1988

EDMONTON CONVENTION CENTRE

Edmonton, Alberta

ADVANCE REGISTRATION FORM

PLEASE PRINT: (one form per delegate, duplicate form if necessary)

NAME: _____
Surname First Name

ADDRESS: _____
Street/Box No. City Province
Postal Code Telephone (office) (residence)

PLEASE CHECK APPROPRIATE GROUP:

☐ Dentist ☐ Office Personnel/Staff ☐ Technician ☐ Spouse ☐ Non-dental/guest ☐ Student

PRE-CONVENTION COURSES — LIMITED ATTENDANCE (Full day courses)

Dr. James Cottone — Infection Control for Today's Health Hazards in Dentistry — Saturday, August 20

Dentists \$125.00
Office staff/other 50.00

Dr. William Becker — Changing Concepts of Periodontal Therapy — Sunday, August 21

Dentists 125.00
Office staff/other 50.00

CONVENTION REGISTRATION:

Dentists — members Alberta Dental Assoc. (due to annual levy) Nil
— members CDA/ADA (American)/foreign 150.00
— non-members CDA 225.00

INCLUDES: Exhibits, Scientific sessions, Monday luncheon

Technicians 50.00
Office Personnel (includes all dental staff) 50.00
Guest/non-dental personnel 50.00
Students Nil

ALL OF ABOVE INCLUDES: CDA Exhibits and scientific sessions

Spouses 50.00

INCLUDES: Exhibits and scientific sessions (check if will attend)
Other activities: Mon. Luncheon West Edmonton Mall ☐
Tues. Family Fun Brunch ☐
Tues. High Tea and tour Muttart Conservatory ☐

Children's Program: 15.00 x

Names and ages: _____

INCLUDES: Registration Round-up plus: (check if will attend)
Monday — Tour day and lunch (zoo, Space Science Centre, Fort Edmonton Park) ☐
Tuesday — Family fun brunch ☐

SOCIAL EVENTS: (Convention Centre)

Sunday Evening — Registration Roundup 15.00
(with world famous SHUMKA DANCERS — early bird draw 8:30 p.m.)

Tuesday Evening — WESTERN NIGHT — Limited attendance (per person) 38.00

Monday Noon — CDA/ADA INAUGURAL LUNCHEON — Dentists only — If will attend check ☐ Nil

(After June 15th add \$25.00)

TOTAL

IMPORTANT: Make cheques payable to "Canadian Dental Association Convention".

Mail to: **Canadian Dental Association**

1988 CANADIAN DENTAL ASSOCIATION CONVENTION 1815 Alta Vista Drive Ottawa, Ontario K1G 2Y6

CANCELLATION POLICY: Cancellations received before August 1st, full refund. Cancellations after August 1st subject to a 25% administrative charge.
No refunds after August 15, 1988.

1988 CANADIAN DENTAL ASSOCIATION CONVENTION

(hosted by the Alberta Dental Association)

AUGUST 21 to 24, 1988

EDMONTON CONVENTION CENTRE

Edmonton, Alberta

HOTEL RESERVATION FORM

☐ Dentist Name _____
☐ Mr. Address _____
☐ Mrs. _____

(City) (Province) (Postal Code)
☐ Miss/Ms Telephone: _____ (Res) _____ (Bus.)

TYPE OF ROOM

☐ Single ☐ Double ☐ Twin ☐ Other _____

INDICATE FIRST THREE HOTEL CHOICES (Rates indicated single/double)

- | | |
|--|----------|
| ☐ Westin Hotel (C.D.A. Headquarters) | \$ 95.00 |
| ☐ Chateau Lacombe (C.D.H.A. & C.D.A.A. Headquarters) | 65.00 |
| ☐ Ramada Renaissance (Exhibitors & Technicians Headquarters) | 65.00 |
| ☐ Four Seasons | 88.00 |
| ☐ Sheraton Plaza | 69.00 |
| ☐ Holiday Inn | 56.00 |
| ☐ Fantasyland Hotel (Theme Room Only) | 175.00 |
| ☐ Centre Suite | 65.00 |
| ☐ Tower On the Park ☐ 1 Bdrm - \$55.00 ☐ 2 Bdrms - \$70.00 ☐ 3 Bdrms - \$85.00 | |

Deluxe rooms are available upon request. All hotels are within walking distance from the Convention Centre except Fantasyland Hotel and Tower On The Park.

Arrival Date: _____ Time: _____ Departure Date: _____

DEPOSIT: A \$75.00 deposit is required to guarantee the accommodation. Please make cheque payable to:
THE EDMONTON CONVENTION AND TOURISM AUTHORITY

— OR —

VISA # _____ MASTER CARD # _____

AMERICAN EXPRESS # _____ OTHER _____

EXPIRY DATE _____ SIGNATURE _____

PLEASE SEND DEPOSIT AND HOTEL RESERVATION FORM TO:

EDMONTON CONVENTION & TOURISM AUTHORITY
9797 JASPER AVENUE NO. 104
EDMONTON, ALBERTA, CANADA T5J 1N9

DEADLINE FOR RESERVATION: July 4, 1988, thereafter requests will be accepted on a room availability basis only. Rooms elsewhere are being held and will be assigned for those persons whose reservation requests are received after the allotment is consumed.

* * * PHONE RESERVATIONS WILL NOT BE ACCEPTED * * *

CANCELLATION POLICY: DEPOSIT REFUNDABLE UP TO 60 HOURS NOTICE.

* * * CONFIRMATION WILL BE SENT DIRECTLY FROM THE HOTEL * * *



Dr. Ronald E. Jordan

Dr. Ronald E. Jordan of the Faculty of Dentistry, University of Western Ontario, London, has received one of dentistry's most coveted international awards – the Elmer S. Best Memorial Award – from the Pierre Fauchard Academy.

The honor is bestowed on a member of the dental profession outside of the United States who has made distinguished contributions that are of international significance in dentistry.

The Pierre Fauchard Academy's cita-

tion which accompanied the Award to Dr. Jordan, stated the honor was for his "long devotion to research in the field of dental composites."

Dr. Jordan is also the president-elect of the National Dental Examining Board. Δ



Dr. Garry Austman

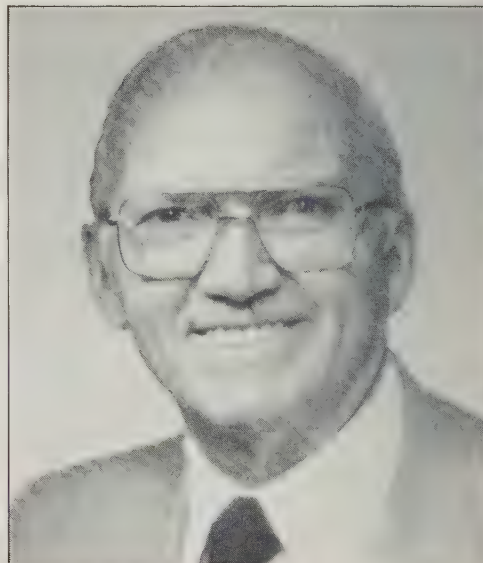
Dr. Garry Austman of Steinbach Manitoba, has been elected the new president of the Manitoba Dental Association. An honors graduate of the University of Manitoba in 1975, Austman has practiced in the rural Steinbach community for 12 years.

First elected to the MDA Board in 1986, he served as Vice-president in 1987 and has been actively involved with the Children's dental health program and government negotiation committees.

Other members serving on the MDA Executive are – Drs. Marty Dveris, vice-president; Heinz Scherle, district 1; Marshall Peikoff, district 1; Tom Breneman, district 2; Pat Sheehan, district 3; Jack Purdie, Minister of Health rep.; Ken Skinner, past president; Les Allen, C.D.A. Governor and Ms. Joann Acorn, Auxiliaries representative. Mike Lasko serves as Registrar, and Ross McIntyre as Secretary-Treasurer. Δ

Dr. George Burgman, of Niagara Falls, Ontario, who is the Canadian Dental Association's resource person regarding identification systems, has recently been named a Fellow in the American Academy of Forensic Sciences at their 1988 annual meeting.

At the meeting of the American Society of Forensic Odontology held concur-



Dr. George Burgman

rently, Dr. Burgman was elected to their Board of Governors. There are only five Canadian members of this 482-member organization.

In 1986 Dr. Burgman was President of the Canadian Society of Forensic Science. Odontology is one of the organization's eight sections.

He also serves as Forensic Odontology Consultant to the Niagara Regional Police force and the Niagara Parks Police Department. Δ



PHOTO COURTESY OF THE FDI, LONDON, UK

A leader in the world dental community, Dr. George Beagrie, Dean of Dentistry, University of British Columbia (far right in photograph) chaired a meeting in March of the Fédération Dentaire Internationale (FDI)/World Health Organization (WHO) Advisory Board which was held at the Royal Society of Medicine in London, England. The Advisory Board has been established to monitor the FDI/WHO Partnership Program which was initiated in 1987. Also shown in the photo are, (from the left): Dr. Runo Cronström (Sweden) – Speaker of the FDI General Assembly; Dr. Carlton H. Williams (USA) – FDI President; Dr. David Barmes (Australia) – Head of the WHO's Oral Health Unit, and Dr. Rupert Gonzalez Giralda (Spain) – FDI President-Elect. Δ

Improving your Financial Bite

Psst . . . Wanna Buy a Bank?

By Jerry Ackerman

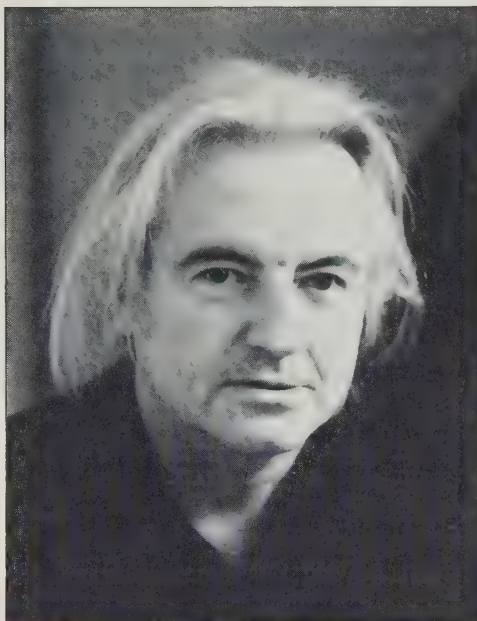
I used to think that owning Canadian bank shares was what a smart investor would find profitable over the long haul.

Monopoly on money creation, insistence on improving the Bank Act rules every 10 years, willingness to absorb smaller troubled banks, ability to prevent foreign banks from participating meaningfully, all meant that success was likely to occur. Presumably the resulting profits would be passed along to shareholders as dividends, or reinvested in the form of expanded loans, making still more money for everyone.

I even found the shares of the bank companies easy to analyze. Since most bank assets were in money form and each company's yearend October 31st, comparisons were readily carried out. Indeed, in my 1982 book with J.J. Brown, 4½ pages were devoted to bank company data, illustrating how to analyze an industry. We suggested adding the year-end appropriations for loss to the shareholder equity in order to arrive at an "adjusted equity".

"Since practically all banking assets except for 21,000 branches and a few ego-built skyscrapers are money, you might think that no adjustments to the apparent shareholder equity are needed. Not so. One great imponderable of the banking business is the outcome of the loan portfolio. Will those \$140 billion of loans be repaid in full? In case they are not, appropriations for loss are set aside in the company books. These must be added back to shareholders equity, because the chances are they will not be fully needed to cover defaulted loans. In any case, no matter what happens in the future, the money is available right now and must be counted in. In the case of a bank whose loan portfolio is exceptionally poor, or one which routinely makes long term loans backed by short term deposits, some 80 per cent of the contingent liability reserve might be added in, rather than 100 per cent. . . ." . . . page 209, "START WITH \$1000."

Prophetic commentary! Here I am, nearly eight years after the manuscript for that book was written, trying to decide on the "adjusted equity" of the largest Canadian banks. When I add together the apparent equity of capital stock and retained earnings plus all the



Dr. Jerry Ackerman, investment counsellor, has spent many years in the field of economics. He is co-author of the best-selling book — "The New Start with \$1,000 — Do-It-Yourself Investment Strategies".

appropriations for losses, my latest yearend data October 31, 1987 looks like this: (in \$millions)

Bank	"Adjusted Equity"?	
Royal	\$ 4,363	?
Montreal	3,462	?
Commerce	4,254	?
Nova Scotia	3,058	?
Toronto Dominion	3,467	?
	\$18,604	?

I believe that question marks are warranted for each line of data, and that by including all equity capital and reserves I do not get an accurate picture of what these companies are really worth. Why not? Dead horses, that's why. Dead horse loans — galore. Loans from Canadian banks to countries "having debt servicing problems" totalled \$27 Billion a year ago. Virtually none of these loans has been serviced since. After \$8 Billion of write downs in the fall of 1987, the dead horse loans *still on the books* looked like this: (in \$millions)

Bank	"Dead-horse Loans"	
Royal	\$ 3,438	!
Montreal	3,715	!
Commerce	1,912	!
Nova Scotia	2,907	!
Toronto Dominion	1,490	!
	\$13,462	!

As a percentage these amount to over 72 per cent of "adjusted equity". See what I mean? Being required to write these loans to zero, i.e. fully uncollectable, would result in the removal of one bank from further operation and the effective crippling of another. Operations of the remaining three would be downsized to a fraction of their former levels.

The Globe and Mail published January prices of Latin America debt on February 29th . . . Colombia, Chile and Venezuela debts priced at 55 to 65 cents "on the dollar", Mexico barely 50 cents, Brazil 45, Argentina and Ecuador in the 30's and Peru less than 10 cents. These prices (usually between bankers) have trended downward year after year.

I see very little opportunity for a reversal. These countries cannot afford to pay their loans. Rescheduling with better terms or rates only papers over this reality. Swapping equity interests in national industries is unacceptable politically.

Mexico markets over \$6 Billion worth of oil. But that can't service a debt of over \$100 Billion. Inflation there was a record 159 per cent last year. Brazil has an even larger debt. Inflation hit 366 per cent in 1987 — literally 1 per cent per day. No wonder they can't keep a finance minister. Our own finance minister has a problem as well. Last years bank debt write-offs cost some \$2600 million in taxes — that's nearly a tenth of our latest deficit. Will Mr. Wilson allow more of the same for 1988? Will Michael Mackenzie (federal superintendent of financial institutions) allow any less?

And how in the world can those stock-brokers convince me that I'd be smart and fashionable if I'd just buy some brand new bank shares? Δ

Hepatitis B and Infection Control

La réduction de l'hépatite B et de l'infection

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One copy of the above articles is available at no charge from the library to all CDA members. Non-members will be charged \$5.00. This bibliography was generated with the help of MEDLARS, a computerized information retrieval system for the Health Sciences field, which has been operational in the library since February 1982.

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Dentistry, the Law and AIDS

Ms. Tracey Tremayne-Lloyd
Barrister & Solicitor
Toronto, Ontario



Ms. Tracey Tremayne-Lloyd

Ms. Tracey Tremayne-Lloyd, a partner in the 14-lawyer firm of Kerzner, Papazian, MacDermid, Tremayne-Lloyd, in Toronto, provided professional input on the subject of legal implications of the treatment, or non-treatment of dental patients with infectious diseases at CDA's Conference on Infection Control in Toronto in late February.

Ms. Tremayne-Lloyd's practice is in litigation, an extensive part of which is health disciplines advocacy. She is currently the Chairman of Health Law for the Canadian Bar Association, Chairman of the Canadian Bar/Canadian Medical Association Liaison Committee and she was also the Chairman of the Canadian Bar Association — Ontario special committee established to study the legal implications of Acquired Immunodeficiency Syndrome, whose report, believed to be the only one of its kind in North America, was delivered in April, 1986.

Drawing on this expertise and background, Ms. Tracey-Lloyd has agreed to write this new column for this Journal.

The law impacts on the health care professional in general and the practicing dentist in particular by imposing standards of practice and duties which must be met in order to comply with the same.

AIDS, while having medical and social implications, also has legal implications of which every health care professional

and in this case, dentists, should be aware.

Briefly, there are three pieces of legislation which impact on the treatment the dentist provides to a person with AIDS, who has ARC or is HIV positive and actually, define the level of care to be provided, and while the name or titles of the Acts may differ from province to province, the substance of the legislation and the mischief it is aimed at does not. Specifically, the law which directly impacts on all practicing dentists with regard to the AIDS issue is contained first in the relevant public health statute in force in your own province, second in the local health disciplines or licencing statute in force in your province and last but not least, in the Human Rights Code in place where you are practicing.

In Ontario, for example, the governing public health legislation is known as the **Health Protection and Promotion Act**.

This Act sets out a comprehensive reporting scheme in relation to both communicable and reportable diseases. AIDS is defined by the regulations to be both communicable and reportable. The Act requires not only reporting by physicians but also by other health care professionals inclusive of dentists. The Act requires the dentist to report to the Medical Officer of Health when he or she simply "forms the opinion" that someone *may be* a sufferer. The opinion of course must be based on some reasonable evidence and I suggest that what is contemplated is a proper clinical diagnosis. It does not however, require the presence or possession of a positive HIV blood test and dentists who have reasonable clinical grounds to form the opinion that a patient is or may be infected are bound by these reporting provisions.

Not only is the **Health Protection and Promotion Act** specific as to who shall report, what and when, it also makes it an offence to contravene a requirement under Part 4 of the Act and in particular, those sections which require a report with respect to a reportable or communicable disease. The fine can be as much as \$5,000.00 per day for each day for which the opinion has been formed and the dentist does not report.

Since virtually all provinces of Canada have public health legislation designed expressly to protect the Canadian public

from the spread of communicable disease, reporting requirements for communicable disease such as those contained in Ontario are in existence in most province across the country. It is of course, incumbent upon the practicing dental profession to be entirely familiar with the legal requirements in their own province and to comply with those requirements in all respects.

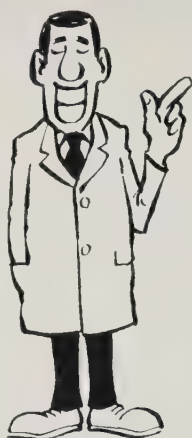
Insofar as standards of professional conduct are concerned there is of course, legislation in every province of Canada governing the licencing and the conduct of members of the health professions specifically, medicine and dentistry. While the precise wording of the "misconduct" provisions may differ from province to province, it is I believe, reasonable to assume that very similar conduct is addressed in all of the various health disciplines or dentistry acts from coast to coast.

The Ontario **Health Disciplines Act** contains both procedural and substantive law enacted to ensure that appropriate standards of medical care are provided in Ontario. Part 2 of the Act and Regulation 447 govern dentistry. At particular concern is section 37 of Regulation 447 which defines "professional misconduct". Of particular interest are the following subsections:

4. failure to maintain the standards of practice of the profession;
32. failing to continue to provide professional services to a patient until the services are no longer required or until the patient had a reasonable opportunity to arrange for the services of another member;
40. conduct or an act relevant to the practice of dentistry that, having regard to all the circumstances, would reasonably be regarded by members as disgraceful, dishonourable or unprofessional.

All of these are specific instances of professional misconduct; the last being what we call the "basket clause".

By refusing to treat a person with AIDS, ARC or who is HIV positive, it is my opinion, that a dentist is at risk to a prosecu-

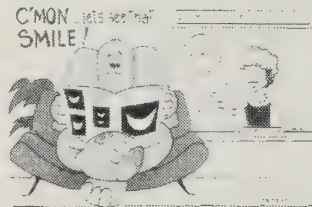
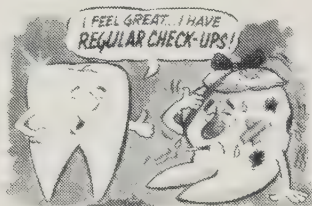


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tion by the College for professional misconduct and not, solely in breach of his or her personal commitment to care which is voluntarily undertaken by all health care professionals.

The citizens of Canada are now protected against all forms of discrimination including discrimination in the provision of health care services.

The Ontario Human Rights Code for example, protects an individual from discrimination in the employment setting and in the provision of services and accommodation on the basis of "handicap". The Ontario Code defines handicap as, among other things, "any degree of physical disability and mental impairment".

There would appear to be no doubt that a person with AIDS or ARC would fall within these definitions, but it is less obvious that a person who tests HIV positive but who otherwise is asymptomatic, would fall within the terms of this definition. The language of any statute is however capable of interpretation and extension to address changing times and changing problems. In Ontario the code is currently and I believe will continue to be invoked by persons suffering discrimination as a result of their infection with HIV or as a result of their suffering from ARC or AIDS. Further, the Ontario Human Rights Code has been amended to add "sexual orientation" as a prohibited ground of discrimination. Consequently, discrimination against those who are HIV positive, have ARC or AIDS cannot now occur indirectly under the guise of discrimination against homosexuals.

Accordingly, any dentist who discriminates on the basis of a patient's actual or suspected AIDS infectivity, or for that matter, any dentist who withholds the provision of dental services on the basis of sexual orientation, could find themselves a subject of prosecution and potential conviction pursuant to the human rights legislation which in turn can give rise to awards of damages against the dentist.

As you can see, dentistry has become more complicated not only due to the advances and knowledge and technology in your field, but also due to the complexity of the legal and social issues which you must address on a day to day basis. This article provides you with at most, a bare bones discussion of three pieces of legislation which impact on your profession. It does not provide individual legal advice and when faced with such a situation, a prudent dentist would be well advised to contact his or her own lawyer. Δ

AIDS — A GUIDE FOR DENTAL PRACTICE

Drs. C.E. Barr and M.Z. Marder

*1987 Quintessence Publishing Co.
124 pages*

This is the second textbook about an interesting, evolving, and controversial subject. The book's purpose is to provide the general practitioner with sufficient information to care for AIDS patients while recognizing and treating the oral manifestations of this systemic syndrome. In stating this objective, the authors emphasize that dentists must deal not only with terminally ill AIDS victims but also with symptomatic infected patients, healthy infected patients, and with individuals at high risk of acquiring an HIV infection.

The book consists of eight, short succinct chapters within 124 pages. The topics include the epidemiology, etiology and immunology of AIDS, its oral and systemic manifestations, infection control, medical therapy, and the social, legal and ethical responsibilities of the dental profession. These chapters are liberally illustrated with colourful charts, clear diagrams, and excellent clinical photographs. The writing style is conducive to easy reading apart from the somewhat stilted third chapter which, consequently, demands a knowledge of immunology. The authors have elected to include extensive bibliographies at the end of each chapter. The absence of reference keys in the text facilitates reading but impedes access to the reference sources.

The authors must be praised for emphasizing the role of "co-factors", including the recent CDC classification of HIV infections, and for distinguishing between "high-risk" infection control procedures and minimal acceptable practices. Thus they can be excused for believing that the Hepatitis B vaccine "will eliminate transmission to patients and family". This requires in addition to the vaccine sterilization of instruments and equipment, plus decontamination of hands, skin, and clothes. Although the final chapter examines the ethical dilemmas from a U.S.A. perspective, the sensible attitudes expressed by the authors are valid.

It is unfortunate but inevitable that textbooks on AIDS are often dated upon publication. This one is no exception, nevertheless its major fault is a failure to describe actual dental treatment. Dr. Barr treats hundreds of AIDS patients per year however he ignores the educational value of including case histories, formulating rational treatment plans, listing successes and failures. The omission of specific dental treatment means that this book is no better nor worse than the equally short, recently reviewed "AIDS and the Dental Team". A knowledge of AIDS will be obtained by reading either or both of these books. Unfortunately, the attending dentist will still have questions regarding the need for oral hygiene instruction, the limitations of restorative, periodontal and prosthetic care, the prevention and treatment of surgical complications. Had Drs. Barr and Marder included such information their textbook would be unique and their goals accomplished. Δ

*This book was reviewed by:
John Hardie, BDS, MSc, FRCD(C)
Chief, Department of Dentistry
Ottawa Civic Hospital*

DIFFERENTIAL DIAGNOSIS OF ORAL LESIONS

**N.K. Wood and P.W. Goaz
(editors).**

*C.V. Mosby Company
St. Louis 1985.
3rd Edition;
791 pages;
1412 Illustrations.*

In the introduction to this book the authors state that the objective of the text is to present a systematic discussion of the differential diagnosis of oral lesions — based on a classification of lesions which are grouped according to their similar clinical or radiographic appearances. Regardless of aetiology or area of occurrence, all similar-appearing lesions are grouped together and discussed in the same chapter. The book is divided into four parts; General Principles of Differential Diagnosis, Soft Tissue Lesions, Bony Lesions, and Lesions by Regions. Each part is then subdivided into chapters dealing with individual clinical appearances,

e.g. Solitary Red Lesions, Yellow Conditions of the Oral Mucosa, Intra-Oral Brownish, Bluish or Black Conditions. This allows for easy retrieval of information, especially for the inexperienced student or clinician.

The authors acknowledge that this approach evolved from their observation of dental students entering clinical work. These were seen to have difficulty in making a reasonable differential diagnosis based on clinical appearances of a lesion, and in attempting to relate their knowledge of histopathology to the clinical features of a lesion. Each chapter starts with a short introduction to the topic and lists the lesions to be covered, starting with the most common. Most lesions are accompanied by black and white clinical photographs. These are of varying quality. The microscopic picture is discussed or presented only when it contributes to the recognition and comprehension of the clinical or radiologic features. This is a deliberate choice on the part of the authors and they recognize that an oral pathology text may be expected to complement the clinical study of oral lesions. With this caveat in mind, and some rather minor criticisms (which are not meant to be all inclusive), e.g. the quality of the colour plates, the continued use of the term fibroma when fibrous hyperplasia is meant, and the use of the term myxofibroma as a variant of inflammatory fibrous hyperplasia, I think this book has a very definite place on the library shelf of any dental student or dental clinician. Δ

*This book was reviewed by:
C. Kilmartin
Faculty of Dentistry
University of Toronto*

ORAL HISTOLOGY — CELL STRUCTURE AND FUNCTION

Walter L. Davis

*Pub. W.B. Saunders
First Edition, 1986.
Soft Cover, 230 pages*

In the foreword, Professor J.L. Matthews predicts that Dr. Davis' textbook utilising much from Dr. Gottlieb's oral histology

collection, will become the universal standard in the area of oral/dental cell structure and function. Certainly in terms of breadth of coverage, attention to detail and review of recent research findings this book essentially meets that promise.

Beginning with four chapters on human development the book takes the student through the process of gametogenesis and embryogenesis to a fairly sophisticated understanding of craniofacial and tooth development including tooth eruption. But surely one studies these processes in order to obtain at least a basis for understanding developmental defects. It is fine to distinguish between merging and fusion processes but how do these relate to defects like Epstein's pearls, Bouin's nodules, nasolabial and alveolar clefts, branchial cysts, etc? The book's exposition on the olfactory placode and the nasal fin are either too superficial or entirely unmentioned. Yet the understanding of these form the key to a variety of developmental and pathological defects of oro-dental structures. The sec-

tion on the mechanism of tooth eruption, albeit short, is probably the most insightful account available in any review literature of the subject. Of course collagen maturation is important in the mechanism of tooth eruption and at last Dr. Davis places it in its correct and meaningful perspective. The chapters on collagen and bone are also the most concise detailed and readable accounts available and it is clear that in this context the writer understands the major research issues from morphological as well as functional perspectives.

The central part of the text is taken up with chapters on the dental and supporting tissues. Generally very well illustrated throughout there are occasional "boners" such as for example figure 8-4 purporting to show cross section of odontoblast processes within dentinal tubules but which cannot be visualized at all in this reviewer's edition. The treatise on intermediate dentin and von Korff's fibres underscore a major defect of the text in general. Structures are mentioned but the

absence of specific illustrations lead to confusion and misunderstanding in what is otherwise an excellently written text. Why not place a sharp line diagram showing the salient features of the hydrodynamic theory of tooth sensitivity for example? Why not diagrammatically represent the significance of metachromasia in context as for example pre-dentin/dentin formation? Similarly with the maturation process of enamel calcification occurring perpendicularly from the surface towards the amelodentinal junction but unfortunately entirely overlooked in this text despite its explanation the origin of cervical hypocalcified areas and the formation of the protective "Darling" layer on the enamel surface.

The concluding chapters deal with oral mucosa, salivary glands and temporomandibular joint in an orderly readable manner even if they are not as excitingly written as the remainder of the text. The note on the presence of catecholamine granules in Merkel cells does not, as the author implies, necessarily support a sensory synaptic function for these cells. Indeed it is more likely that the catecholamines are part of an effector axon reflex explaining the increased sensitivity of skin in stress reactions, etc.

The book is undoubtedly an important contribution to the oral histology literature and is highly recommended as a reference text for the undergraduate and graduate student of oral biology. The bibliography is extensive and increases the book's appeal to those involved in the preparation of more detailed assignments on selective topics. Suitably placed line diagrams would significantly add to the book's value however. Δ

*This book was reviewed by:
Dr. Norman Thomas
Faculty of Dentistry
University of Alberta*

RESTAURATION PROTHÉTIQUE AMOVIBLE DE L'EDENTATION PARTIELLE

Dr. J. Lejoyeux, chef du
Département de Prothèse et
Professeur à la faculté de
chirurgie dentaire de Paris VII

2^e édition,
Maloine S.A. éditeurs,
Paris 1980 — 743 pages

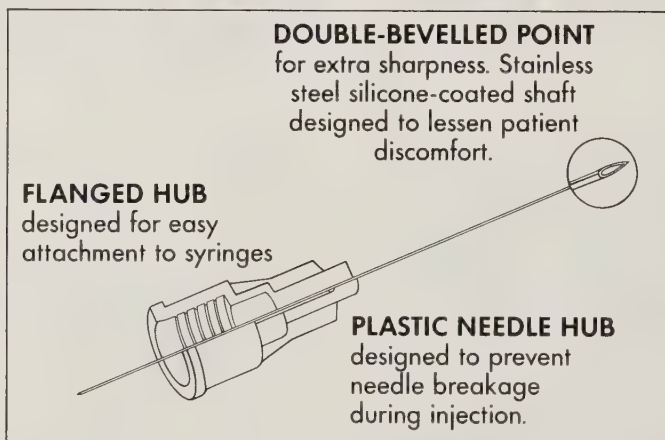
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majeur destiné aux étudiants(es) ainsi

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qu'aux les praticiens généraux désireux d'approfondir ou de revoir des notions fondamentales dans le domaine de la prosthodontie amovible.

D'intérêt particulier pour le lecteur nord-américain, nous retrouvons une introduction à l'aspect psychique du traitement trop souvent absent dans le contenu de recueils semblables. Une description des éléments anatomiques et histologiques ayant une incidence sur le diagnostic et sur le traitement sert de base pour le développement des observations cliniques qui serviront à l'élaboration des traitements préprothétiques de l'édentation partielle dans un premier temps en passant par la conception et tracés de bases des restaurations prothétiques amovibles des édentations partielles tout en décrivant amplement les crochets, les techniques de laboratoire, les matériaux utilisés pour la coulée des modèles, les matériaux métalliques de base, le rétablissement de l'esthétique, le choix et montage des dents postérieures, la conception gnathologique d'une restauration prothétique amovible d'une édentation partielle, la polymérisation ainsi que les effets comparés de diverses solutions prothétiques sur l'intégrité tissulaire.

Le texte ne présente que des schémas à l'encre, donc la présentation des illustrations est quelque peu sobre. De plus, la photographie clinique est rudimentaire et il serait difficile d'identifier les références bibliographiques présentées à la fin du texte aux différents chapitres et énoncés.

La qualité du contenu rend tout de même ce manuel indispensable pour les adeptes de la prosthodontie amovible. Δ

Hubert Gaucher, DDS, MScD
Prosthodontiste
Professeur agrégé
École de Médecine dentaire
Université Laval

ISHIKAWA'S COLOR ATLAS OF ORAL PATHOLOGY

Ishikawa, G. and Waldron, C.A.

Ishiyaku EuroAmerica,
St. Louis and Tokyo 1987

This is an excellent book.

In the Preface, Dr. Waldron informs us that it was originally published in 1983 in Japanese. The English edition is based on the second (1986) Japanese edition using the same illustrations but with the accompanying text rewritten by an American team under Dr. Waldron's

editorship. In addition to Dr. Ishikawa, four other well known Japanese oral pathologists contributed chapters, Drs. T. Ishiki, H. Yamamoto, A. Komori, and A. Amemiya.

The atlas is divided into eight chapters covering diseases of the teeth, dental caries and its sequelae, diseases of the periodontium, diseases of the oral mucosa, diseases of the jaw bones, diseases of the salivary glands, cysts and tumours.

The excellence of the book derives from the excellence of the illustrations, of which there are over five hundred. They include clinical photographs and radiographs, gross photographs and radiographs of surgical specimens, micro-radiographs and photomicrographs. The clinical photographs and photomicrographs are all in colour. There are many photomicrographs of ground (undecalcified) specimens and a few transmission and scanning electron micrographs.

The standard of these illustrations is remarkably good in regard to colour reproduction, resolution and general clar-

ity. Aesthetically they are delightful. The range of diseases described is wide and only the rare conditions are omitted.

As always there are a few details that can be criticized in such a comprehensive text. For example the photomicrographs of a lateral periodontal cyst appears to this reviewer to show a keratocyst. There is no clinical photography of acute primary herpetic stomatitis. The photomicrograph of histiocytosis X is less than adequate. However the number of such points of criticism is very small and essentially the information and concepts are those generally accepted at present throughout the world.

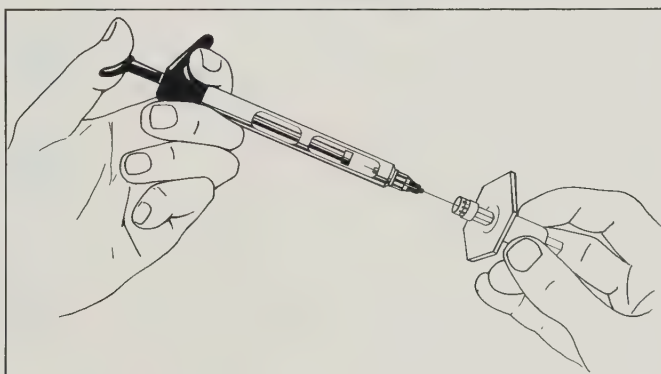
The book would be a useful adjunct to undergraduate or postgraduate students studying oral pathology, would be a very useful reference text for dentists in practice and would provide an easy-to-read refresher course in the subject. Δ

This book was reviewed by:
Dr. J.H.P. Main
Faculty of Dentistry
University of Toronto

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Oral manifestations of human immunodeficiency virus infection

RECOGNITION AND DIAGNOSIS

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ABSTRACT

Oral signs and symptoms of human immunodeficiency virus (HIV) infection may be the first presentation of the infection or may develop during the course of the disease. Since the beginning of the epidemic, oral manifestations have been significant markers of the disease. Knowledge of the signs and symptoms and associated infections and tumours are needed to allow recognition, diagnosis and treatment. The mandate of dentistry in diagnosis and management of oral disease demands an understanding of HIV infection, and oral complications of this infectious disease.

Introduction

The epidemic of acquired immunodeficiency syndrome (AIDS)¹ caused by infection from human immunodeficiency virus(es) (HIV)^{2,3} has now been reported in 132 countries with probably more than 300,000 victims, although fewer have been reported to the World Health Organization. AIDS is characterized by a defect in cell mediated immunity that results in susceptibility to opportunistic infections and neoplasms. Approximately half of persons afflicted have died; eventually all will succumb to progressive loss of immune competence. The epidemic continues since there may be millions of individuals already HIV infected, and presently there is no effective vaccine or curative treatment. In Canada there were 1,730 cases of AIDS

reported in adults and children as of May 1988, approximately half have died.⁴

In those persons who have been HIV infected and show signs and symptoms, the underlying pathology involves an irreversible malfunction and death of the helper/inducer T-lymphocytes (T4), the cells which critically modulate our immune system and protect against opportunistic infections and malignancies.⁵ The co-factors involved that account for the variety of signs, symptoms and the natural history of HIV infection remain unclear.^{6,7}

While millions of individuals may have been infected by HIV, the number who will develop AIDS is unknown. Past estimates have ranged up to 30 per cent, but this figure appears to be too low. In a San Francisco study in which a cohort of HIV positive individuals have been followed for at least six years, 65 per cent have developed AIDS or AIDS-related complex (ARC), and at seven years, AIDS or ARC increased to 78 per cent of this group. ARC is a combination of signs and symptoms that do not meet the criteria for AIDS but incur a high risk.⁸

The epidemiology of HIV infection is complicated by the enigma of seroconversion and development of AIDS, by the prolonged incubation period associated with HIV infection and the fact that some individuals who are infectious may be without recognizable signs and symptoms. This picture is further complicated by under-reporting and confidentiality factors.

Widespread prevalence of the virus among high risk groups is well documented (Table I). Testing of stored blood samples in high risk males (homosexuals

and bisexuals) revealed an increase in HIV antibody from 4.5 per cent in 1980, to 71.3 per cent in 1985.⁹ In Canada, studies of high risk individuals demonstrate 28 per cent to 35 per cent to have HIV antibody,^{10,11} with an increasing seropositivity rate occurring annually.¹⁰ Those at highest risk for infection are sexually active homosexual and bisexual males and intravenous drug abusers. World-wide these groups account for approximately 90 per cent of all reported cases of AIDS. There is concern regarding the increasing spread into the heterosexual population primarily through bisexual behaviour, prostitution¹² and intravenous drug usage with contaminated needles. The Canadian experience of risk groups show 81.7 per cent of the cases have been in homosexual-bisexual males, 5.1 per cent in individuals from endemic area, 4.7 per cent recipients of blood or blood products, 2.8 per cent other or unknown risk and only 0.6 per cent were at risk due to intravenous drug abuse.⁴

There is no Canadian centre involved in management of oral and dental findings in a large number of HIV positive patients on a regular basis, and therefore, there is a lack of Canadian data on the prevalence of oral findings. Our clinical experience regarding oral manifestations in Vancouver suggests that findings similar to those of San Francisco studies are occurring in Canada. The epidemiology of the infection, particularly with reference to the at-risk groups, is similar between San Francisco, California and Canada, but different between Canada and the United States, which has a larger percentage of intravenous drug abusers (Table I).

TABLE I
High Risk Groups for AIDS

Adult Cases	Canada (%)	U.S.A. (%)	San Francisco
Homosexual/bisexual males	81.7	65.7	84.7
IV drug abusers	0.6	16.7	1.6
Homosexual and IV drug abusers	2.5	7.7	11.7
Recipient of blood and blood products	4.7	2.7	0.8
Heterosexual partner of high risk person	2.5	1.8	0.2
Individuals from endemic area	5.1	1.9	—
Others/unknown	2.8	3.5	0.6
Total number of cases (April, 1988)	1,697	57,575	4,689



Fig. 1: Pseudomembranous candidiasis (thrush) presenting with erythema and adherent plaques affecting the oropharynx. Also note the erythema, and depapillation of the dorsum of the tongue.



Fig. 2: Atrophic candidiasis with intense erythema affecting the hard and soft palate, resulting in complaints of burning of the roof of the mouth.

Therefore, findings of studies on oral manifestations from San Francisco will be used in reference to Canada.

During patient examination, it is mandatory that appropriate barrier protection be used. Infection control guidelines have been recommended for all health care workers, and specifically for dental personnel.¹³⁻¹⁶ Diagnosis of oral manifestations is based upon signs and symptoms supported by dental radiographs, cultures and smears, and biopsy. Appropriate consultation and/or referral may be indicated because of the diversity and complexity of diagnosis and management. Some of the oral manifestations may be unusual, or may be subtle, requiring expertise and experience in their diagnosis and management.

The signs and symptoms of HIV infection itself are quite variable and often are not specific for the illness. Their occurrence alone, or in combination, particularly in an individual of a high risk group, should be suggestive of HIV infection. Weight loss, fever, night sweats, malaise, diarrhea and lymphadenopathy may develop and persist for months. Recently, HIV infection and progressive weight loss (wasting syndrome) have become criteria for the diagnosis of AIDS. Respiratory symptoms of shortness of breath and chronic cough may be present. These findings in individuals in high risk groups without other cause should prompt investigation or referral. It should be noted that pneumocystis carinii pneumonia is the most common infection in AIDS, and several forms of tuberculosis are increasing in the face of HIV infection. Other indications of immuno-alterations may include abnormal blood components, malignant tumors, recalcitrant dermatitis and skin energy. An increased frequency of drug reactions may be seen presenting dermatitis, and in the mouth as mucosal disturbances with erythema and ulcerations or lichenoid reactions.¹⁷ Histories that include hepatitis and/or venereal diseases should suggest behavioral activities that indicate high-risk patients.

The purpose of this paper is to describe the oral manifestations of HIV infection to identify the dental role in recognition, and diagnosis.

Oral manifestations of HIV infection

Oral signs and symptoms may be the first sign of clinical disease, or may develop during the course of the disease.^{14,17-20} A report of 369 patients with the chief complaints in the head and neck included Kaposi's sarcoma (KS), candidiasis, neck masses, lymphoma, Herpes simplex



Fig. 3: Herpes simplex infection affecting the palatal mucosa with large viral ulcers, that are extending locally, to produce an area of confluent ulceration with peripheral rounded ulcerations.

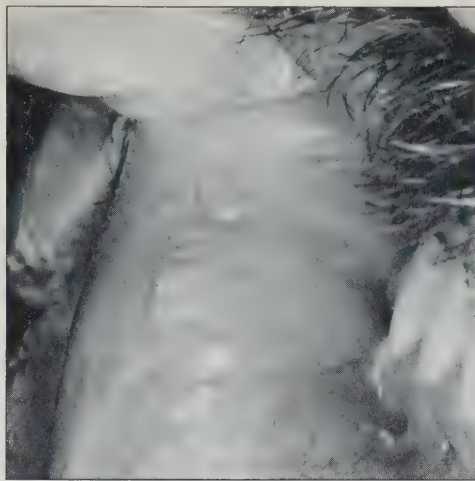


Fig. 4: Condyloma acuminatum affecting the lip mucosa. These wart-like lesions are common in individuals at risk due to sexual practices.

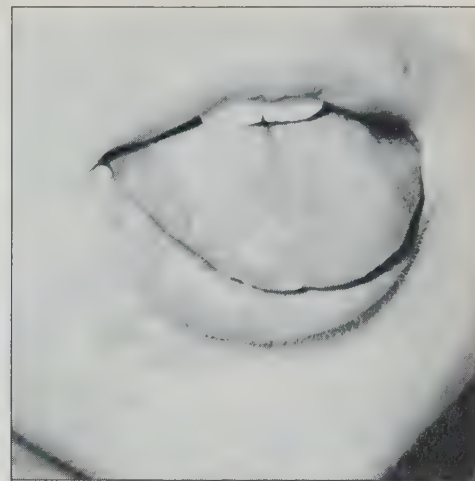


Fig. 5: Trigeminal nerve involvement with Varicella-Zoster. The vesicles and ulcerations are present intraorally and extraorally, with distinct involvement of the mental and lingual nerves.

virus (HSV), and Herpes varicella zoster (VZ).¹⁹ Approximately 40 per cent of these patients had head and neck or oral findings on initial evaluation.¹⁹ A San Francisco study of 375 homosexual males described the frequency of oral manifestations.¹⁷ In another study, differences in the oral findings were seen between homosexual and bisexual males and heterosexuals primarily associated with intravenous drug use.¹⁸ In fact, in the study reported by Phelan and others, Kaposi's sarcoma and hairy leukoplakia were found only in homosexual and bisexual males. The most common and significant oral diseases appear to be KS, candidiasis, "hairy" leukoplakia, Herpes virus infection and HIV-associated gingivitis and periodontitis.^{14,17-20}

Opportunistic infections **Fungae and bacteria**

The most frequent HIV-associated infection of the oral cavity is candidiasis. By far the most frequent species is *Candida albicans*, which accounts for over 90 per cent of oral fungal infections. It has been shown in a San Francisco study¹⁷ that candidal organisms were cultured from 66 per cent of homosexual males and 92 per cent of these individuals showed associated signs and symptoms, indicating overgrowth of the fungus and thus a pathologic process. In another study,¹⁸ 88 per cent of 103 AIDS patients had candidiasis; 72 per cent were heterosexual and 28 per cent were homosexual.

In the general population, asymptomatic carriers of candida would be found in approximately 40 to 60 per cent.²¹ Clinical oral candidiasis usually develops under such conditions as antibiotic usage, diabetes, xerostomia, unclean dentures, leukopenia and immunosuppression.

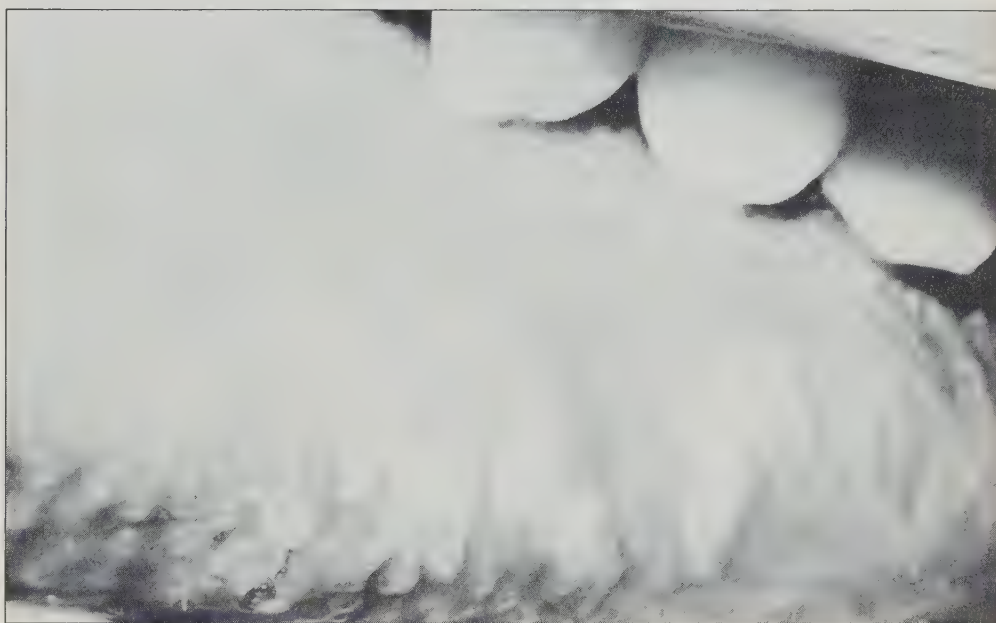


Fig. 6: Hairy leukoplakia affecting the lateral border of the tongue. The white lesion has unique linear fissuring and corrugation producing a "hairy" appearance.

When there is no obvious reason for a chronic candidal infection, immunosuppression must be considered in the differential diagnosis.

Recognition of candidiasis is sometimes difficult because of the varied white and red appearances of the mucosal lesions. Discomfort and altered taste are often present, but may have a broad range of severity. The candida infection is often chronic and recurrent, and long-term control usually becomes difficult, particularly with increasing immunosuppression. Candidiasis may present as a florid, pseudomembranous form (thrush) associated with inflammation, erythema and white plaques that can be wiped off (Fig. 1). Atrophic candidiasis appears as a red lesion and is commonest on the palate and the dorsum of the tongue (Fig. 2). Symptoms of burning, sensitiv-

ity and discomfort are common. Often, the clinical appearance involves a mixture of white and red mucosal changes, and angular cheilitis often accompanies the intraoral involvement.

As well as being an early finding of immunosuppression, the development of symptomatic candidiasis may herald the progression of AIDS.²²⁻²⁴ In one study, 59 per cent of those in high risk groups with oral candidiasis developed AIDS.²⁵ Candidiasis is a problem, not only because of the symptoms but because the fungal organisms may place an additional burden on an already compromised immune system and may serve as a focus for systemic spread of disease.^{26,27}

In the immunocompromised patient, bacteria that are not members of the normal oral flora result in signs and symptoms. The most commonly found bac-

teria have been *Klebsiella* species and *Escherichia coli*, representing respiratory and coliform flora. When found, they have been associated with erythematous appearing mucosal changes, ulcerations and concomitant irritation. Palatal and gingival granulomatous masses associated with *Mycobacterium avium* intracellulare (an atypical tubercle bacillus) and histoplasmosis have been seen.^{28,29} Diagnosis depends upon clinical suspicion and appropriate clinical and laboratory testing.

Herpes simplex virus (HSV)

HSV infections are manifested mainly as herpes labialis (cold sores) and recurrent intraoral herpes (Fig. 3). The lesion(s)

can be of long duration (weeks to months), and be progressive locally, presenting as clusters of vesicles or ulcerations that can progress to become large confluent ulcerations. HSV is most common on the lips and attached tissues of the gingiva and palate. Sometimes these lesions occur for the first time in an individual after HIV infection, and if there is a history of previous HSV episodes of infection, the uncomfortable lesions seem to occur more frequently with severity.

Human papilloma viruses (HPV)

HPV are found in oral condyloma acuminata (venereal warts). The condyloma can appear as either small wart-like squa-

mous papillomas or can simulate small, sessile fibromas (Fig. 4). These lesions can be found on any mucosal surface and are contagious to both the host (increased spread) and to sexual partners. In male homosexuals, anal and/or genital warts are usually present. The role of HPV in other oral lesions is being studied. The occurrence of these lesions reflects sexual activity that classifies such patients in a high-risk group for HIV infection.

Varicella zoster (VZ, herpes zoster, shingles)

VZ can develop in individuals who are immunosuppressed. Its appearance in young people should suggest an evaluation for an underlying systemic disease including leukemia, lymphoma or HIV infection. VZ occurs more frequently in HIV infected persons and carries a poor prognosis.³⁰ Characteristic of this disease is the occurrence of unilateral vesicles in a neurologic distribution that break and scab (Fig. 5). The vesicles are usually self-limiting but the main complication is painful post-zoster neuropathy.

Cytomegalovirus (CMV)

Most HIV infected individuals have cytomegalovirus antibodies, indicating past exposure. However, in some of these cases, CMV can be recovered. CMV may result in mild or acute viral infections with findings of CMV mononucleosis, prolonged fever, dermatitis, oral mucositis and CMV pneumonia,^{31,32} and appears to have a predilection for salivary glands.³³ Dry mouth, which may be seen in AIDS and HIV positive patients, may be related to salivary gland infection by CMV.^{14,17,18,20}

Hairy Leukoplakia (HL)

Hairy leukoplakia is a unique and significant lesion that primarily occurs on the lateral borders of the tongue. Because of the characteristic corrugated and white appearance, it has been termed "hairy" leukoplakia (Figs. 6 and 7).³⁴ HL can extend to the dorsal and ventral surfaces and infrequently occurs on the buccal or other mucosal sites. It has also been reported in other HIV infected individuals, e.g., hemophiliacs and drug abusers.^{35,36}

The clinical diagnosis can be confirmed by histologic examination, usually demonstrating epithelial hyperplasia, an immature surface keratin, minimal or no inflammation, and cells with cytoplasmic clearing in the prickle cell layer, termed koilocytosis. There is evidence that the koilocytes contain Epstein-Barr virus (EBV).³⁷ The role of EBV, either as an



Fig. 7: More extensive involvement of the lateral border of the tongue due to hairy leukoplakia. In this case there is extension of the lesion onto the ventral and dorsal surfaces.



Fig. 8: HIV associated periodontitis resulting in alveolar bone loss in the mandibular incisor region. The interdental papillae have been destroyed. Note the intense erythema of the upper central incisor gingiva.

etiologic factor or transient opportunistic organism, in HL is not clear; therefore, the explanation of occurrence or transmissibility remains an enigma.

Confirming the diagnosis of HL is important because of the following: essentially all individuals with HL are HIV positive, the chances are very high that the patient is viremic and therefore infectious; and the risk is high, apparently exceeding 80 per cent, that the individual will develop AIDS within 30 months.^{38,39}

HIV associated periodontal disease (HIV-P)

Gingival lesions and alveolar bone loss are frequent findings in HIV infected individuals.^{17,40} A retrospective study¹⁷ of homosexual men indicated an occurrence in almost one-fifth of patients. HIV-P is manifested clinically in a variety of ways. It may be quite minimal and can appear first as chronic or acute necrotizing ulcerative gingivitis. Chronic gingival erythema is frequently present. Subtle gingival recession without ulceration is another frequent finding (Fig. 8). The gingivitis and periodontitis are often associated with pain and bleeding, are usually chronic and progressive and may lead to alveolar bone loss and early loss of teeth.

Preliminary data indicate that there is a change in the subgingival microbial flora and colonization, which in turn reflects immuno-disregulation. When these gingival and periodontal lesions are observed in high-risk individuals or those in whom HIV infection is a possibility, AIDS or ARC should be included in the differential diagnosis.

Vesiculo-erosive lesions

Other conditions associated with HIV infection have been initial attacks or the increased frequency and severity of recurrent aphthous stomatitis (canker sores). The aphthous lesions can be large, and due to their chronicity, develop raised borders which may make clinical diagnosis difficult. Because associated pain can be prolonged and debilitating, management with corticosteroids should be considered.⁴¹ Other mucosal reactions of erythema and ulcerations (erythema multiforme) and lichen-planus like reactions may be related to drug reactions and immune dysfunction.

Thirty to 40 per cent of all HIV infected individuals have central nervous system involvement.⁴² Therefore, any young patient who appears to have progressive short-term memory loss, dementia and/or motor deficiency should be suspect. In some patients, transient, self-limiting

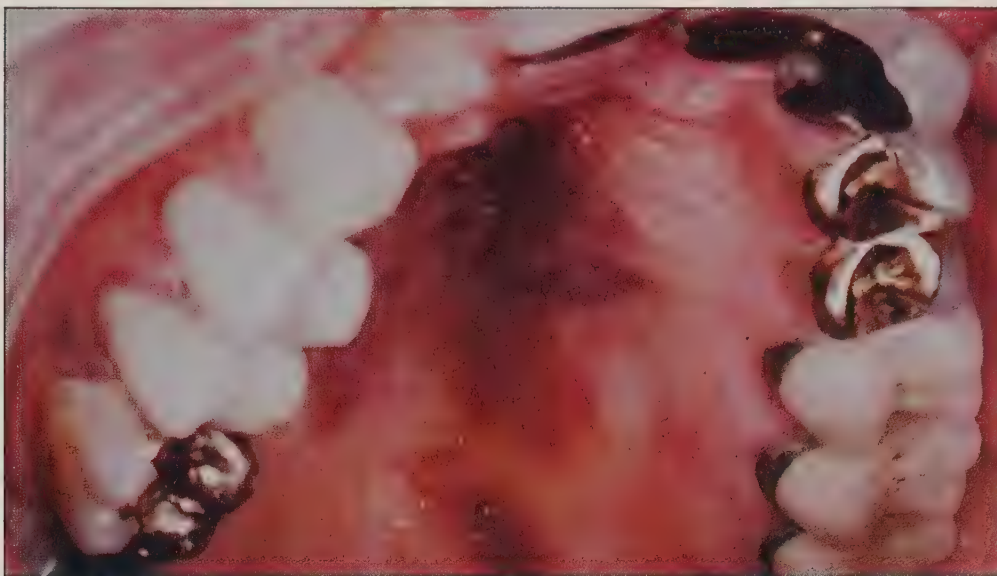


Fig. 9: Kaposi's sarcoma affecting the palatal mucosa. The lesion presents as a flat discolouration. The area will not blanch with pressure.



Fig. 10: Kaposi's sarcoma involving the anterior gingiva, resulting in a lesion that is of concern to the patient due to both esthetics and discomfort.

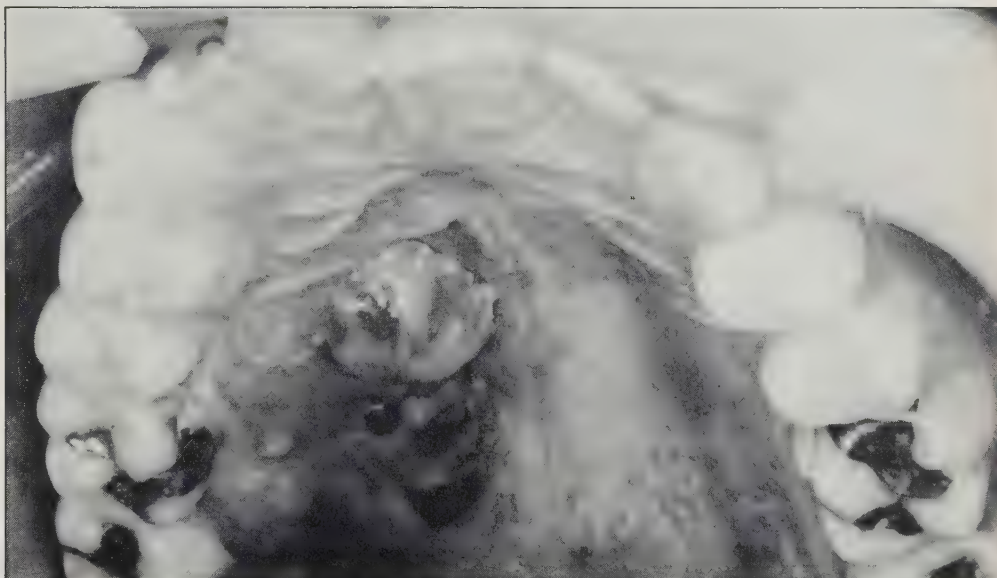


Fig. 11: Extensive involvement of the palate by Kaposi's sarcoma. The lesion has progressed to become elevated, with areas of nodularity and is now associated with pain and bleeding.



Fig. 12: Gingival infiltration by non-Hodgkin's lymphoma. The gingiva was erythematous, edematous, with a soft texture. The lesion was originally thought to present dental and periodontal infection associated with the carious tooth.



Fig. 13: In this HIV positive patient, erythroleukoplakic, ulcerated areas of the lateral aspect of the tongue, with indurated borders, proved on biopsy to be squamous cell carcinoma.

mucosal lesions, e.g., non-specific ulcerative or erythematous changes which do not fit into any diagnostic category, have been observed;^{14,17,19,20,38} some may represent HIV seronegative-seropositive conversion. Autoimmune platelet deficiency has been reported, resulting in varying degrees of thrombocytopenia (TP). TP may cause purpuric mucosal lesions or lead to excessive oral surgical manipulations.⁴³

Malignancies

The most common malignancy associated with AIDS is Kaposi's sarcoma. KS is one of the cardinal signs of AIDS and is commonly seen in the oral cavity^{14,17-19,44,45}

and in an HIV infected person, is specific for AIDS. It is more frequently found in homosexual/bisexual males, but is still recorded in 20 per cent of all AIDS patients in the United States. KS is a vascular-appearing lesion, of blue-red discolouration, usually occurring as multiple lesions in flat, slightly raised or nodular form (Figs. 9, 10 and 11). KS is asymptomatic unless it is large and nodular and usually with an ulcerated surface. The areas of the oral mucosa most commonly affected are the palate and attached gingiva.^{14,17,19} While clinically KS may be confused with ecchymosis, hematoma or hemangioma, the diagnosis can be confirmed by biopsy.⁴⁶ In Canada, KS

has been reported in 27.3 per cent of patients.⁴ The etiology of this endothelial tumour, probably of lymphatic origin, is unknown. Electron microscopy of the ultrastructure of KS of the oral mucosa demonstrated viral particles with similar ultrastructure of HIV,⁴⁷ and CMV as a co-factor has been speculated. The significance of oral KS was demonstrated in a study that showed over one-half of the patients had oral KS and that in 10 per cent, the oral lesions were the only finding.¹⁷

The second most common malignancy is that of non-Hodgkins lymphomas (NHL). Occasionally, the first sign may be a mass or swelling in the oral cavity (Fig. 12).¹⁷ NHL in patients at risk for AIDS indicates a poor prognosis.⁴⁸ Diagnosis is established by biopsy. Some forms of NHL meet the diagnostic criteria for AIDS (e.g., central nervous system NHL).

Carcinomas have been associated with HIV infection in a higher than expected number of young adults (Fig. 13).¹⁷ The exact relationship to HIV infection regarding time sequence of occurrence, impact on the immune system, and co-factors is not clear. However, the frequency indicates a cause and effect relationship rather than a coincidental finding.

Conclusion

Oral manifestations of HIV infection may be early indications of developing disease. Due to the frequency of oral findings in patients with HIV infection and the number of individuals estimated to be infected, it should be expected that practitioners will have the opportunity to identify, diagnose and treat the oral complications. Many of these lesions are indications of HIV infection, and some suggest the presence or impending development of AIDS. As the immune system becomes increasingly compromised following HIV infection, oral lesions become more numerous, varied and chronic. Therefore, dental professionals have an important role in diagnosis and management. Δ

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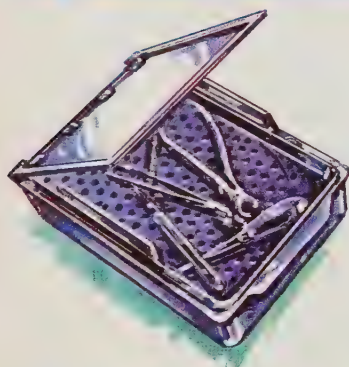


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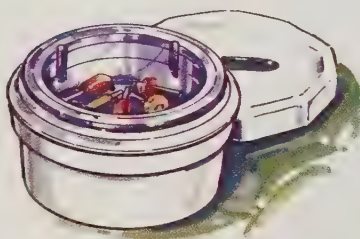
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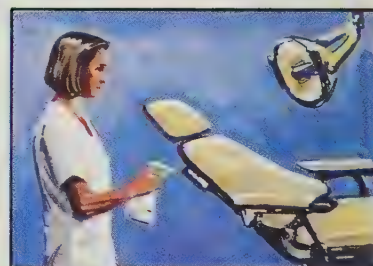


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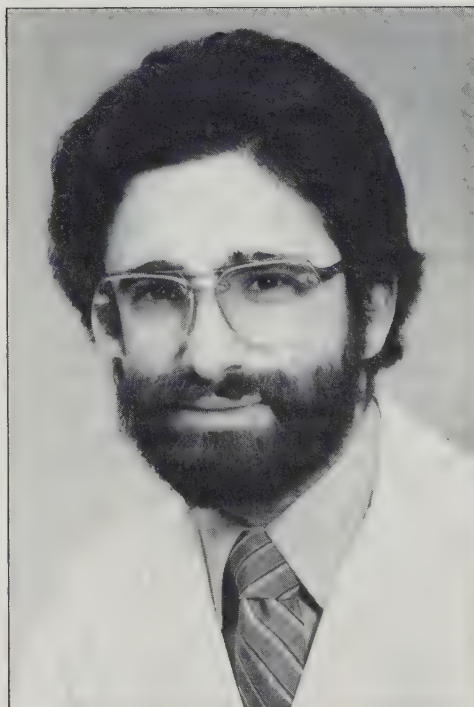
Oral Management of individuals with **HUMAN IMMUNODEFICIENCY VIRUS INFECTION**

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Dr. Joel B. Epstein

ABSTRACT

Due to the continuing epidemic of human immunodeficiency virus (HIV) infection, the dental professional will be called upon to manage its oral manifestations, as well as to treat any coincidental dental disease in infected patients. Antiviral therapies may result in longer survival of patients with AIDS and lead to increased need for management of the oral manifestations of HIV infection. This paper reviews the present management guidelines for the oral findings in HIV infection. The general practising dentist should be aware of the management of oral manifestations and assist in this management or refer the patient for appropriate care.

Introduction

The etiology of AIDS is due to viral infection of lymphocytes and irreversible suppression of T-helper lym-

phocytes.¹ This results in interference with cell mediated immunity, B-lymphocyte function (immunoglobulin production) and macrophage chemotaxis, leading to susceptibility to opportunistic infections and neoplastic diseases. The virus is also neurotropic and is associated with central nervous system abnormalities resulting in motor deficits and memory loss. AIDS is the most destructive consequence of HIV infection. Exposure to HIV may not result in infection and may not produce disease. Chronic, non life-threatening illness with variable manifestations, progressive generalized lymphadenopathy (PGL) and AIDS-related complex (ARC) may occur in 20 to 40 per cent. Fatal immunodeficiency (AIDS) may develop in 30 per cent or more of infected individuals.²⁻⁶

Individuals at risk due to sexual practices (homosexual/bisexual active males), prostitutes, sexual partners of a high-risk individual, intravenous drug users, past recipients of blood transfusions and blood products, and children born to HIV-infected mothers.⁷ Bisexuality, prostitution and drug abuse appear important in the spread to the heterosexual population, and widespread prevalence of the virus among high-risk groups is well documented.⁷ In Canada, studies of high-risk individuals demonstrate that 28 to 35 per cent have HIV antibody,⁸⁻⁹ with an increasing seropositivity rate occurring annually.⁸ It has been estimated that more than one million Americans may be carriers of HIV and that 30 per cent could develop AIDS. With the continuing AIDS epidemic, health care professionals must anticipate that they may treat patients with AIDS or those who are at risk of its development.

HIV transmissibility and infectivity

Dental personnel are exposed to HIV, since high-risk individuals knowingly or unsuspectingly are being treated in dental offices. Reliable estimates of the number of HIV-infected persons depends upon widespread serologic testing and longer follow-up observations. Prolonged incubation periods, the lack of an available antigen test, difficulties in obtaining accurate patient histories, variable signs and symptoms, the evidence for variations in retrovirus types,¹⁰ and under-reporting, complicate the picture further. These complexities make accurate assessments of infectivity (virulence and transmissibility) difficult. Erratic appearances of HIV of unknown virulence in saliva and oral blood, and inconsistent uses of barrier techniques, improper disinfection/sterilization procedures, and office

"accidents" such as needle-stick injuries further complicate our concepts of risk. All cases in health care workers must be further clarified against possible backgrounds of homosexual/bisexual activities, intravenous drug abuse, past blood transfusions or the possibility of exposure through infected sex partners.

There are no documented cases of AIDS caused by casual contact.¹¹ Even health care workers exposed to blood of AIDS patients appear to be at an extremely low risk and have not developed AIDS, unless they are members of the high risk groups.^{12,13} While to date there have been no cases of dental personnel who are not members of a high-risk group contracting AIDS, there have been documented cases of health care workers seroconverting from HIV negative to positive following needle stick injuries or blood splatter to skin or mucosa.¹⁴ This heightens the possibility of HIV infection in non-high-risk persons, even though the probability is extremely low.

There is sufficient reason for dental personnel to follow protective guidelines to further reduce the small risk of transmission through contaminated saliva and oral bleeding.^{12,15} Since all high-risk patients cannot be readily identified either clinically or by histories, clinicians cannot selectively identify high risk individuals and limit the use of precautionary techniques to those cases. As with all infectious diseases, many patients who are antibody positive for HIV and even those who are viremic, may be asymptomatic.^{4,6,16,17} Patients in the early stages of AIDS or between episodes of opportunistic infections may be without signs or symptoms. Variable and long incubation periods further complicate recognition. Identification of individuals is not always possible, therefore infection control measures must be used regularly with all patient contact that may result in exposure to blood or body fluids. There are other infectious agents that are of concern during dental practice, including Hepatitis B virus, Herpes simplex, papilloma viruses and other agents.¹⁵ There is the obligation to protect other patients, as well as the need to comply with current standards for office barrier techniques and disinfection/sterilization procedures.^{12,18-21}

Precaution guidelines

The dental profession has a responsibility to treat patients at risk, including those already infected. Following these guidelines will help to protect clinicians, office personnel and other patients from HIV transmission.^{12,15,18-21}

Barrier techniques are mandatory protection. They include the use of gloves, protective eyewear, and masks, if splatter is anticipated. Although there is no evidence that HIV or Hepatitis B is transmitted by aerosols, the use of a mask as a barrier is prudent as protection from particulate matter and other infectious agents that may be spread by droplets.¹⁵ Protective clothing can be effectively cleaned by normal laundering procedures.

Sterilization by heat is advised, since this kills all microbial forms when performed correctly and can be verified by appropriate test methods. For certain instruments and equipment that do not lend themselves to heat sterilization, proper use of accepted chemical sterilants can achieve disinfection or sterilization. The presently accepted solutions are glutaraldehydes, iodine based products, sodium hypochlorate (bleach) and complex phenol solutions.^{15,18-21} Attention to conditions of use and the manufacturers' guidelines for dilution, temperature and usage time must be strictly followed.

The same attention must be paid to laboratory practices, procedures involving impressions, models, appliances and polishing techniques. This will minimize risks of spread of infectious agents through these phases of dental service and will limit breaks in infectious disease control.

Management of oral manifestations

Approximately 40 per cent of patients with AIDS present with or have on initial evaluation head and neck manifestations, and up to 95 per cent will develop oral manifestations during the course of their illness.²² The patient must have a definitive diagnosis prior to beginning therapy, or should be referred to a dental specialist or a physician or dentist experienced in the medications and treatments. Physicians may not be familiar with the advantage that can be gained by application of topical agents. The oral condition may be successfully managed, or the use of topical agents may allow a lower dose or shorter duration of systemic therapy.

Bacterial/fungal lesions

Candidiasis is the most common oral infection. Over half of the AIDS and high-risk AIDS patients have signs and symptoms of oral candidiasis.^{23,24} Diagnosis depends on clinical findings, culture, smear evaluation, and response to antifungal therapy. Occasionally, biopsy of lesions is necessary for diagnosis, particularly in patients with hyperplastic candidiasis that results in white patches that

cannot be wiped off. Intermittent or chronic treatment with topical antifungal medications may be effective, however, systemic agents are frequently required. As immunosuppression increases, topical and systemic agents may not result in control of the infection. Nystatin is the first of the topical agents to use, either in the suspension form, or tablets dissolved in the mouth. The oral suspension and oral tablets contain sucrose, which can be a disadvantage. The best choice may be vaginal tablets dissolved in the mouth to provide prolonged contact of the agent in the oral environment. The vaginal tablets are generally well tolerated, and do not have the disadvantage of containing sucrose. Other semisynthetic topical antifungal agents include the use of clotrimazole and miconazole, which are available in topical creams and as vaginal tablets. These agents have increased potency and efficacy.²⁵ Chlorhexidine has broad antiseptic effects and antifungal activity, and can be prescribed as an oral rinse (0.1-0.2 per cent).²⁶

Intermittent or chronic treatment with topical antifungal medications may be effective; however, systemic agents are frequently required. These topical agents can be used in combination, or in addition to systemic agents. Oral ketoconazole is frequently required in order to control oro-pharyngeal involvement. Ketoconazole has become the treatment of choice for candidiasis that has not responded to topical therapy.^{27,28} Ketoconazole may produce side effects of nausea, vomiting, abdominal pain, fatigue, dizziness and may affect liver function. The side effects are rare but the most serious involve liver toxicity.^{29,30} Review of liver function is prudent with the use of this drug.

Infections of the oral mucosa with bacteria and fungi not commonly causing oral infection and not part of the normal oral flora may be evident. Topical antiseptic rinses, including chlorhexidine, are beneficial. Treatment depends upon accurate diagnosis, which requires clinical suspicion, culture and sensitivity testing, and possible biopsy with special stains.

Virus associated lesions

Infection or reactivation of several viruses associated with HIV infection may occur in the oral and perioral tissue. Labial and oral HSV infection is common. The lesion(s) can be of long duration and be progressive locally. Topical and/or systemic antiviral medications are used in treatment. Acyclovir is the drug of choice. Topical acyclovir cream may be of some benefit; however, systemic acy-

clovir is often required. Oral acyclovir (200 mg, 5/day) is prescribed. Intravenous therapy is infrequently required.

Human papilloma viruses cause warts, including oral papillomas, condylomata (venereal warts) and focal epithelial hyperplasia. Therapy is generally not required unless the lesions are symptomatic or interfere with function, or are esthetic concerns. Treatment involves surgical removal of the local lesion. Attention must be given to other body sites of the virus and to possible lesions in the sexual partner, as the source of possible re-infection must also be treated.

Herpes zoster infection may occur along the nerve distribution of cranial nerves. Antiviral therapy with acyclovir in zoster doses of greater than two grams per day is needed.

Cytomegalovirus (CMV) has been identified in many of the patients with HIV.³¹ There is no routinely available therapy for CMV at the present time, although, antiviral drugs may be available soon.

Hairy leukoplakia (HL) has been described as an asymptomatic diffuse corrugated white patch on the lateral borders of the tongue in patients with HIV infection.^{13,31-55} HL is probably a viral induced epithelial hyperplasia associated with Epstein-Barr virus and possibly also papilloma virus.³⁶ When the lesions are extensive, they may become esthetic concerns, and may interfere with function. A case report of the use of topical vitamin A acid described disappearance of the lesion during use, but recurrence soon after discontinuation.³⁷ Acyclovir has been used at zoster doses (800 mg qid for two weeks), resulted in resolution of the clinical lesion,³⁸ supporting the probable viral etiology.

Neoplastic Lesions

The neoplastic conditions associated with AIDS may be due to the effects of carcinogens and oncogenic viruses, in individuals with immunodeficiency that may affect tumor surveillance.

Kaposi's sarcoma (KS) is one of the cardinal signs of AIDS. KS is commonly seen in the oral cavity.^{13,22,25,32} Oral lesions are seen in approximately half of all patients with KS. Local excision of localized oral lesions that produce esthetic concerns may be helpful. Low doses of radiation or cytotoxic chemotherapy with vinblastine may be used for symptomatic lesions.

Other oral cancers that have been reported associated with immunosuppression include squamous cell carcinoma and lymphoma.^{13,22,31,32} Due to their appearance in younger age groups, detailed oral

and head and neck examination must be completed and diagnosis of unusual tissue findings must be made. Standard cancer therapies are used in management of the cancers that may be associated with HIV infection.

Other oral manifestations

Premature, progressive periodontal disease has been seen in 17 per cent of a group of 375 homosexual men, 150 of whom had a diagnosis of AIDS.³² Clinical symptoms include pain, marked spontaneous bleeding, mobility of involved teeth and bad breath. AIDS virus associated periodontitis may begin with intense erythema of attached and marginal gingiva and may progress to destructive periodontitis leading to marked bone loss, and may include a superimposed necrotizing gingivitis.³⁹ The gingival and periodontal involvement may progress, with periods of remission and exacerbation. The etiology of the periodontal disease is not certain but it has been associated with candida species and unusual bacterial species.⁴⁰ The periodontal status is difficult to manage. Present therapy includes frequent dental scalings, local debridement and irrigation with antiseptic solutions (betadine, chlorhexidine), to affect the altered microbial population.⁴⁰ Systemic antibiotics are not used routinely due to the risk of potentially severe infections that could occur from overgrowth of opportunistic or resistant organisms.

Recurrence of aphthous ulcers has been reported in HIV infection.⁴¹ These ulcers may be large — over 1 cm in diameter, involve more than one area, and be persistent, developing rolled borders. Treatment of aphthous-like ulcerations may include topical steroid application to lesions,⁴² rinsing with benzydamine hydrochloride rinse (Tantum),⁴³ and antiseptic/antibacterial treatments with topical tetracycline rinse or chlorhexidine suspension.²⁶ Topical and/or systemic steroid may be necessary in management. However, it should be noted that topical steroid applications may heighten the susceptibility of the patient to candidiasis. Topical anesthetic and analgesics may be helpful for control of the symptoms. These include benzydamine rinse and other topical anesthetics such as lidocaine. It may be necessary to excise the lesions if they are not responsive to local therapy and to develop a definitive diagnosis.

Other mucosal reactions of erythema and ulcerations (erythema multiforme) may be related to drug reactions and immune dysfunction. Drug reactions may

present as a dermatitis, and in the mouth as mucosal disturbances with erythema and ulcerations.³² These conditions may be treated by discontinuing the medications that may have been associated with their cause and with topical anti-inflammatory medications, including benzydamine rinse and steroids.

Salivary gland swelling and xerostomia have been reported in children, and xerostomia in adults.^{32,44} Xerostomia may lead to complaints of oral discomfort, change in taste, burning mouth, dysphagia, and lead to a change in diet. In some patients, dry mouth may be associated with susceptibility to candidiasis. If xerostomia becomes chronic it may lead to an increased incidence of demineralization of the teeth and to dental caries and difficulty with dentures, if present. Stimulation of saliva production may be possible with increase in frequent oral rinsing with saline or bicarbonate rinses, high fluid intake, taste stimulation, and mechanical stimulation (ie: sugar free candies or chewing gum). The use of sialogogues anetholetrithione (Sialor, 1 tablet tid), and pilocarpine drops (1 percent) has been studied in other conditions resulting in xerostomia, and may be useful in xerostomia associated with HIV infection.⁴⁵⁻⁴⁷ If dry mouth is chronic in dentate patients, regular dental care and fluoride applications are required due to the increased risk of caries.

Conclusion

Due to the frequency of oral findings in these patients and the numbers of individuals estimated to be infected, it should be expected that dental professionals will become involved in the diagnosis and treatment of the oral complications of HIV infection. Dental needs of patients with infectious conditions will also develop and require treatment. It is expected that the use of antiviral drugs in AIDS and in HIV infected patients may prolong survival, leading to an increased number of related complications and conditions, and may result in the already recognized complications becoming more common.

Evidence prevails that casual contact, excluding sexual exchanges and sharing of contaminated needles, does not incur a significant risk for HIV transmission. However, cases of HIV serologic-positive health care workers in otherwise non-high-risk individuals are slowly emerging. Therefore, while the possibility exists for transmission through casual contact, the probability is extremely low. Because there is some risk, low as it might be, infection control guidelines have been developed by the Centers of

Disease Control, the Canadian and American Dental Associations and others and are now the standard expected of dental professionals. Identification of individuals with infectious disease is not always possible. Therefore, infection control guidelines must be followed during all patient examination and treatment.

The management of the oral manifestations of HIV infection will be the subject of ongoing study, and should be expected to change with further study. The management presented in this article is suggested on the basis of the management of these conditions in non-HIV infected individuals, and the research that has been completed to date in this specific patient group. As some of the medications have potential for side effects and drug interactions, the management should be conducted by a health care worker with experience in treating patients with HIV infection, and interest in management of the oral manifestations. Δ

Reprint requests to Dr. Epstein, Cancer Control Agency of British Columbia, 600 West 10th Avenue, Vancouver, B.C. V5Z 4E6.

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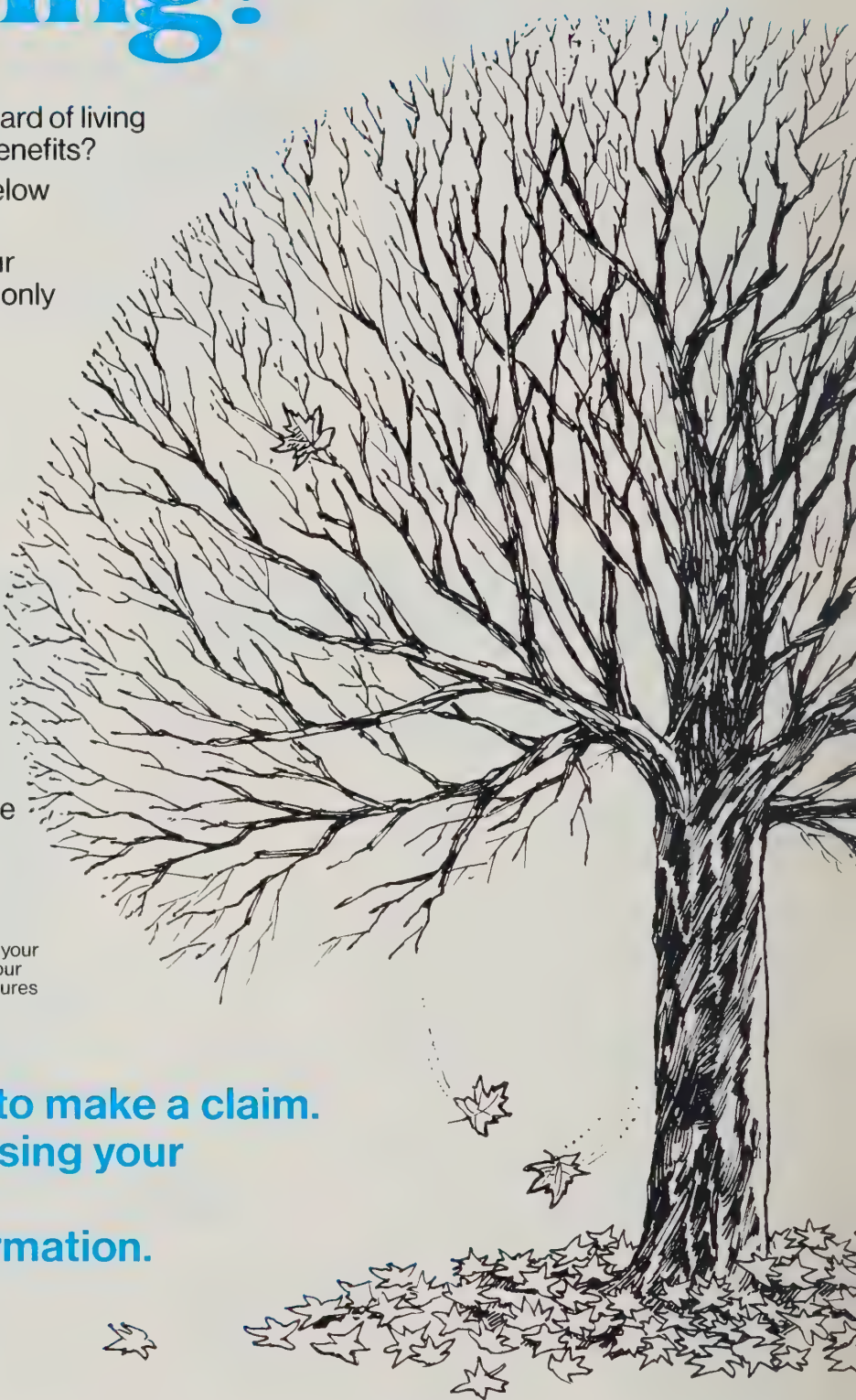
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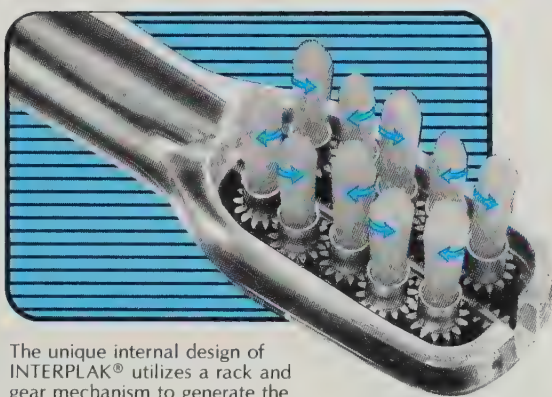
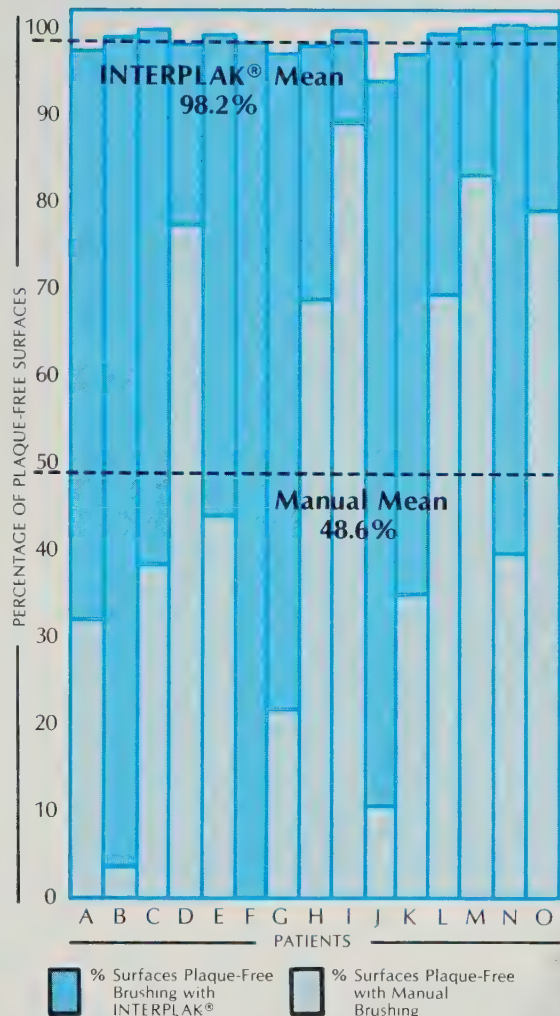
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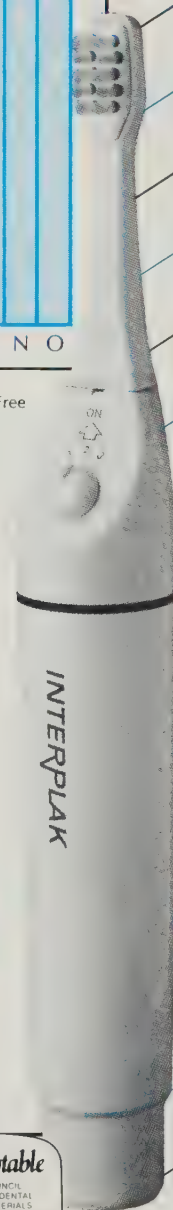
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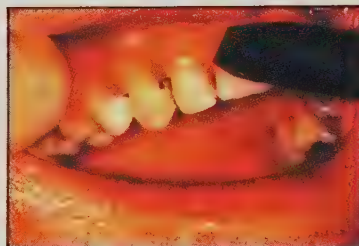
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INCREASE IN QUEBEC DENTAL MANPOWER

and demand for dental care from 1971 to 1985

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ABSTRACT

Two surveys conducted in Quebec in 1971 (N=1552) and 1985 (N=840) permit a comparison of the increase of dental manpower and demand for dental care.

Within that period, the number of dentists in the province of Quebec has gone up 59.2 per cent, while simultaneously patients visiting their dentist annually increased by 76.4 per cent. This increase was higher for women (83 per cent) and for people living in rural areas (97.8 per cent). The number of visits per year also increased considerably.

For each age group, there is an increase in the proportion of adults who visited the dentist within the last 12 months and also in the proportion of those who made two or more visits over the same time period. The increase was more pronounced for the groups between 30 and 49 years old.

Key words: Dental health services, dentistry, employment, private practice, dental care.

RESUMÉ

Deux études faites au Québec (Canada) en 1971 (N: 1552) et en 1985 (N:840) fournissent des éléments de comparaison entre l'augmentation de la main-d'oeuvre dentaire et celle de la demande pour les soins dentaires.

Au cours de cette période, le nombre de dentistes s'est accru de 59,2 pour cent au Québec alors que celui des personnes qui ont effectué une visite annuelle chez le dentiste a augmenté de 76,4 pour cent. Cet accroissement a été plus élevé chez les femmes (83,0 pour cent) et les gens des régions rurales (97,8 pour cent). On a aussi constaté une augmentation considérable du nombre de visites par année.

La proportion des adultes qui se sont rendus chez le dentiste au cours des douze derniers mois de même que celle des gens qui ont fait deux visites ou plus chez le dentiste a connu une croissance, et ce pour chacun des divers groupes d'âge. L'augmentation a été plus prononcée de la part des personnes âgées de 30 à 49 ans.

Mots-clés: services dentaires, dentisterie, emploi, pratique privée, soins dentaires.

There have been many articles in recent years dealing with anxiety in the dental profession about the constant increase in the number of dentists in industrialized countries.¹⁻⁴ This increase is of concern because it occurs at the same time as demographic decrease and decline in caries prevalence and severity among children and teenagers. Scandinavian countries, where the dentist-population ratio is the lowest in the world (approx. 1:1000), have already experienced problems of unemployment among dentists.⁴ In Canada, the dentist popula-

tion has increased by 52 per cent from 1971 to 1981, whereas the population growth has only increased by 12 per cent over the same period.²

Until the present time, however, few significant studies have been carried out on the evolution of dental care demand. This evolution is influenced by demographic growth, developments in dental health, and also by changes brought about by a number of factors that influence utilization of the services. Some studies have shown a significant increase in dental visits over the last decade. An American study shows that the percentage of people who paid visits to their dentist in the last two years has gone from 54.6 per cent in 1963 to 61.9 per cent in 1976.⁵ In Great Britain, the annual rate of dental visits for the dentulous has gone from 45.5 per cent in 1968 to 53 per cent in 1978.⁶

However, the variation in dental health services utilization has not been studied according to the widespread increase in manpower. Dental data were collected in Quebec in order to establish a possible link between supply and demand in dental health services in the adult population between 1971 and 1985.

Methods

The sources used to determine the dental manpower and the dentist-population ratio were the register of the Board of Dentists of the Province of Quebec, whose annual report provides the number of dentists licenced to practice as per

TABLE I

Descriptive Characteristics of the Samples

Characteristic	Description	1971 (N = 1552)** %	1985 (N = 840)** %
Sex	Male	44.4	49.4
	Female	55.6	50.6
Age (years)	18-20	—	5.4
	21-29*	18.8	27.5
	30-39	15.7	20.9
	40-49	20.7	13.1
	50-59	14.6	15.2
	60+	30.2	5.9
Area	urban (5000 + pop)	70.7	81.5
	rural (< 5000 pop)	29.3	18.5

* For 1971, this age group is 20-29 years.
 ** These percentages correspond to the distribution of the participants. To compensate for the over-representation of certain population groups, a weighting system was used in the presentation of the results. This weighting provides balanced estimates of the population groups.

April 1, and the population of Quebec figures from Canada census for 1971 and updatings of the Bureau de la statistique du Québec for 1985.

The data relative to the demand for dental services came from two sources: The Nutrition Canada Survey of 1971 and the omnibus pool of the Institut québécois d'opinion publique (IQOP) of November 1985.

The Nutrition Canada Survey conducted between March and September 1971 encompassed a probability sample of 3,302 adults of both sexes from the population of Quebec after a stratification by area, age and sex. The results were weighted for provincial estimates. The dental data were collected from dental examinations and interviews conducted in selected survey centres. The number of adults who participated was 1,552 (47 per cent).

IQOP is using a probability sample of 1,353 adults of both sexes from the population of Quebec after a stratification by area, and their results are weighted for provincial estimates. The IQOP polls are based on telephone interviews. Eight hundred and forty (62.1 per cent) participants answered the questionnaire on the use of dental services.

For the two surveys, the questionnaire included two questions regarding information on the number of visits to the dentist in the preceding five years, as follows: 1) When did you visit your dentist last? and 2) How many times did you visit your dentist in the last 12 months?

From these data, it was possible to describe the evolution of the dental manpower and the demand for dental care in Quebec in 1971 and 1985 and also to compare the changes on both sides.

Results

The characteristics of the two samples are shown in Table I. The data relative to sex, age and area are given in percentages. Except for adults under 21, the ages are grouped in 10-year intervals. It was not possible to use the data from the Nutrition Canada survey for the 18 to 20-year-olds as children 0-18 were not divided according to sex and the 19-year-olds formed a group in itself. These percentages correspond to the distribution of the participants. In the presentation of the results, a weighting system was used in order to compensate for the over-representation of certain population groups, particularly the over 60-year-old group in the 1971 survey.

Dental Manpower

The number of active licensed dentists in 1971 was 1,635 — a ratio of 2.71 dentists per 10,000 population or 1:3,690. In 1985, the number was 2,859 with a ratio of 4.32 per 10,000 population or 1:2,315 (Fig. 1). The percentage of increase during the interval was 59.2 per cent. The increase in dentists was due to a larger number of graduates from a new dental school (École de médecine dentaire, Université Laval) since 1975 and from another school (Faculté de médecine dentaire, Université de Montréal), which raised its output by 60 per cent in 1970.

Demand for Dental Services

The time elapsed since the last visit to the dentist makes it possible to estimate the size of the population seeking regular dental care. Figure 2 shows the percentage of adults visiting the dentist annually in 1971 and 1985. The total population

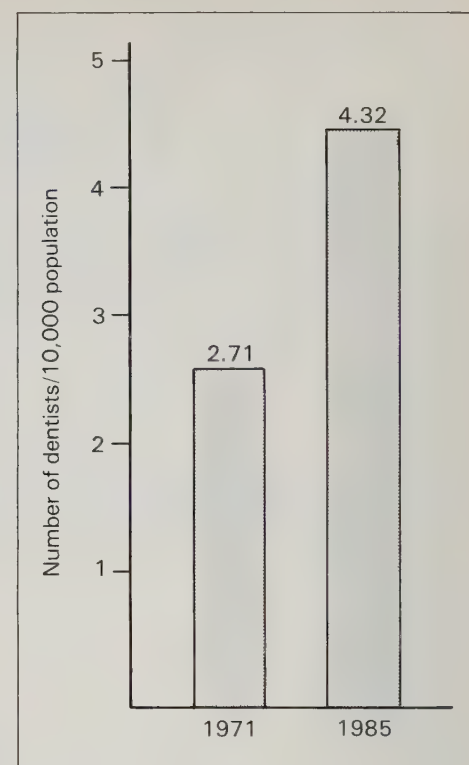


Fig. 1. Number of dentists per 10,000 population segment for 1971 and 1985.

demonstrates a considerable growth of interest in the dental services as 50.8 per cent had paid at least one visit to the dentist in 1985, as compared to 28.8 per cent in 1971 — an increase of 76.4 per cent (Fig. 3) in 14 years. When the population is broken down according to sex, the percentage values are 50 per cent for males and 51.6 per cent for females in 1985, compared to 29.8 per cent and 28.2 per cent, respectively, in 1971. When the population is broken down according to urban or rural area, the percentage values are 52.1 per cent in the urban area and 45.3 per cent in rural areas in 1985, compared to 31.2 per cent and 22.9 per cent, respectively, in 1971. The extent of the increase in males (67.8 per cent) and females (83.0 per cent) during the interval indicates that females are even more eager to seek dental services. The difference is larger when one considers the increase between urban and rural areas (67.0 per cent and 97.8 per cent respectively). The overall demand has grown by 76.4 per cent whereas the dental manpower, in terms of dentists, has increased at a lesser rate — (59.2 per cent) (Fig. 3).

The results of the second question regarding the number of visits (two or more) to the dentist during the last 12 months are shown in Figures 4 and 5. The total population of Quebec exhibits a real change in attitude as the percentage of adults visiting the dentist twice or

more in the last 12-month interval has increased from 13.7 per cent in 1971 to 32.7 per cent in 1985 (**Fig. 4**) – an increase of 138.7 per cent (**Fig. 5**).

The rather small sexual differences which existed in 1971 still persist with an even larger edge in favour of females in 1985. This amounts to an increase of 132.1 per cent for males and 142.3 per cent for females (**Fig. 5**). The results in urban and rural areas also indicate that major changes have taken place from 1971 to 1985. The increases from 16.3 to 34.9 per cent in urban areas and from 7.3 to 23.8 per cent in rural areas (**Fig. 4**) correspond to an upsurge in demand of 114.1 and 226.0 per cent respectively (**Fig. 5**). If one interprets the fact of visiting a dentist twice a year or more as a propensity to place dental services at a higher level of values, these results leave no doubt as to the extent of appreciation that dental services have experienced in the last 14 years in the population of Quebec, in general.

Breaking down the population by age shows which groups have best taken advantage of visiting the dentist more often (**Figs. 6 and 7**). In **Figure 6**, it is shown how in 1971 the propensity to visit the dentist at least annually decreased with age. At that time, 43.8 per cent of adults in Quebec between the ages of 20-29 years visited their dentists once a year whereas the 60+ year-olds did so only to the extent of 14.8 per cent. Between the two groups, the values are intermediary but progressively decreasing with age. In contrast to this situation, in 1985, there seems to be some kind of a plateau between 20 and 49 years of age, as the percentage of the three groups are of the same order of magnitude, between 56.3 per cent and 63.1 per cent. The loss of interest in dental services which was observed in 1971 in the groups of 30-year olds and up does not manifest itself before the age of 50 years and yet the interest is obviously sustained as the percentage of the 50-59 group in 1985 is about the same as the 20-29 group in 1971. If one considers that in the span of 14 years, the groups of 1971 have moved on the 1985 curve one step and a half to the right, the value 43.8 (1971) is 60 per cent in 1985 and the value 30.3 (1971) has become approximately 36 per cent in 1985. This is a strong indication that the change in attitude took place simultaneously in all adult age groups during that period even if the outcome was more noticeable in the younger groups.

The curves of **Figure 7** show the spread in the age groups among the adult popu-

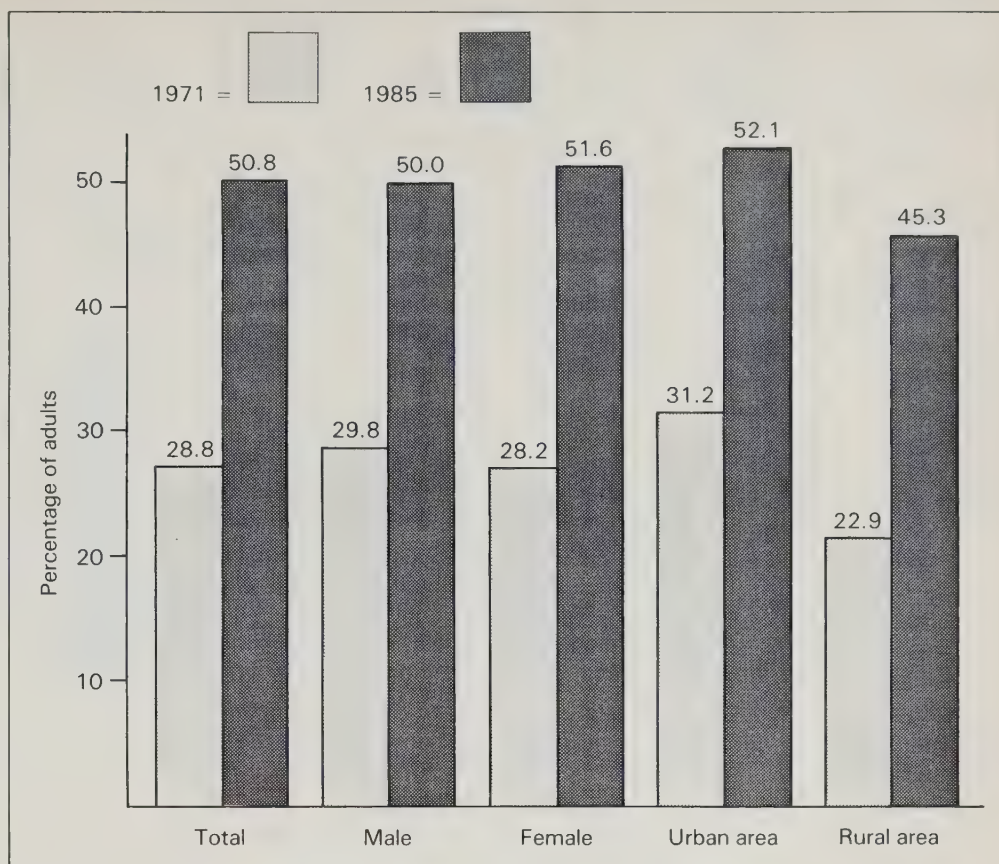


Fig. 2. Percentage of adults visiting the dentist annually for 1971 and 1985.

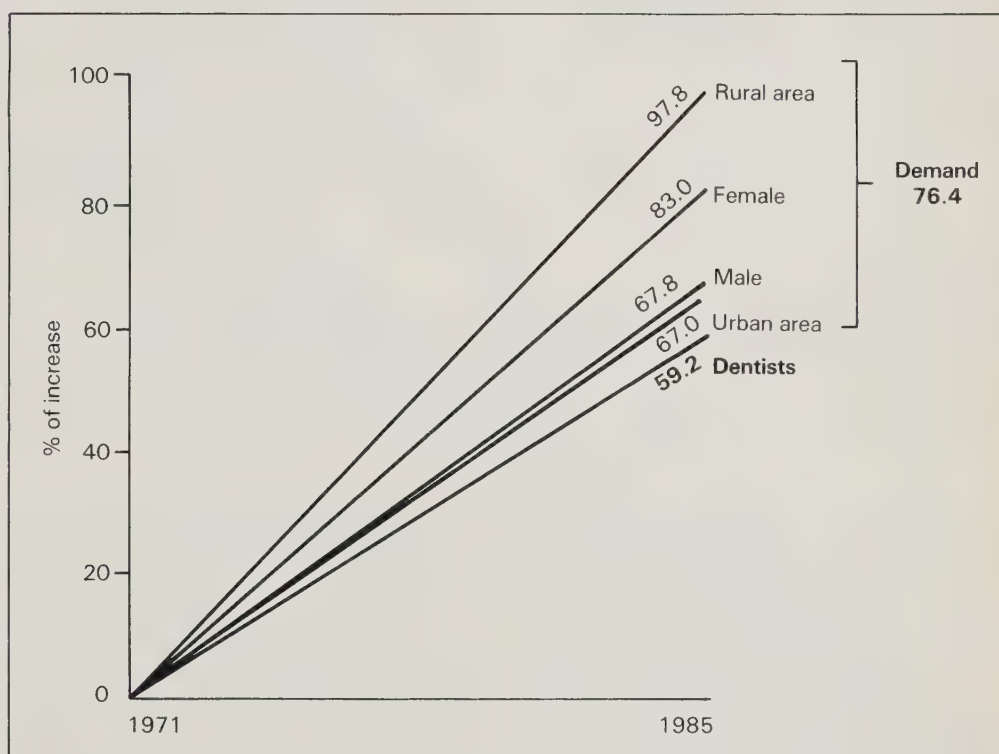


Fig. 3. Percent increase of dental manpower and of adults visiting the dentist annually.

lation visiting the dentist twice or more in a year. If one interprets these results as an assessment of the number of adults receiving various treatments in the dental office and also those who are on a follow-up program requiring two visits per year, then these curves show a change of pat-

tern in dental services utilization. In 1971, only 22.8 per cent of adults aged 20-29 years visited the dentist twice or more per year and in the older groups the proportion fell between 12.5 and 7.7 per cent. In 1985, there was a steady demand in the groups from

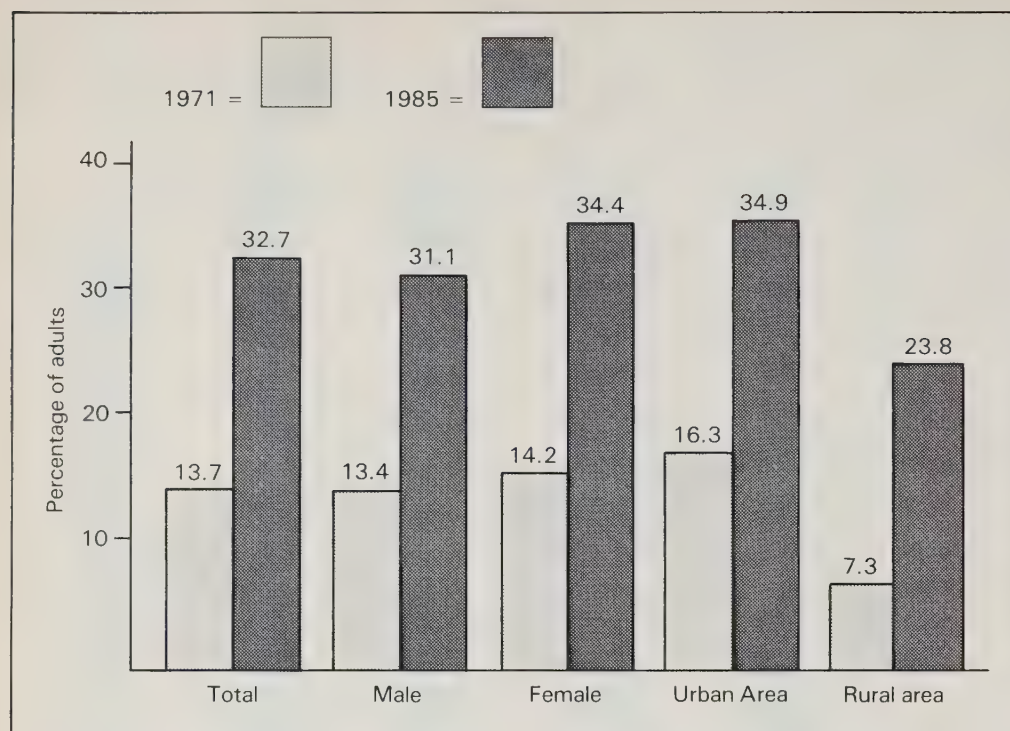


Fig. 4. Percentage of adults visiting the dentist twice or more annually for 1971 and 1985.

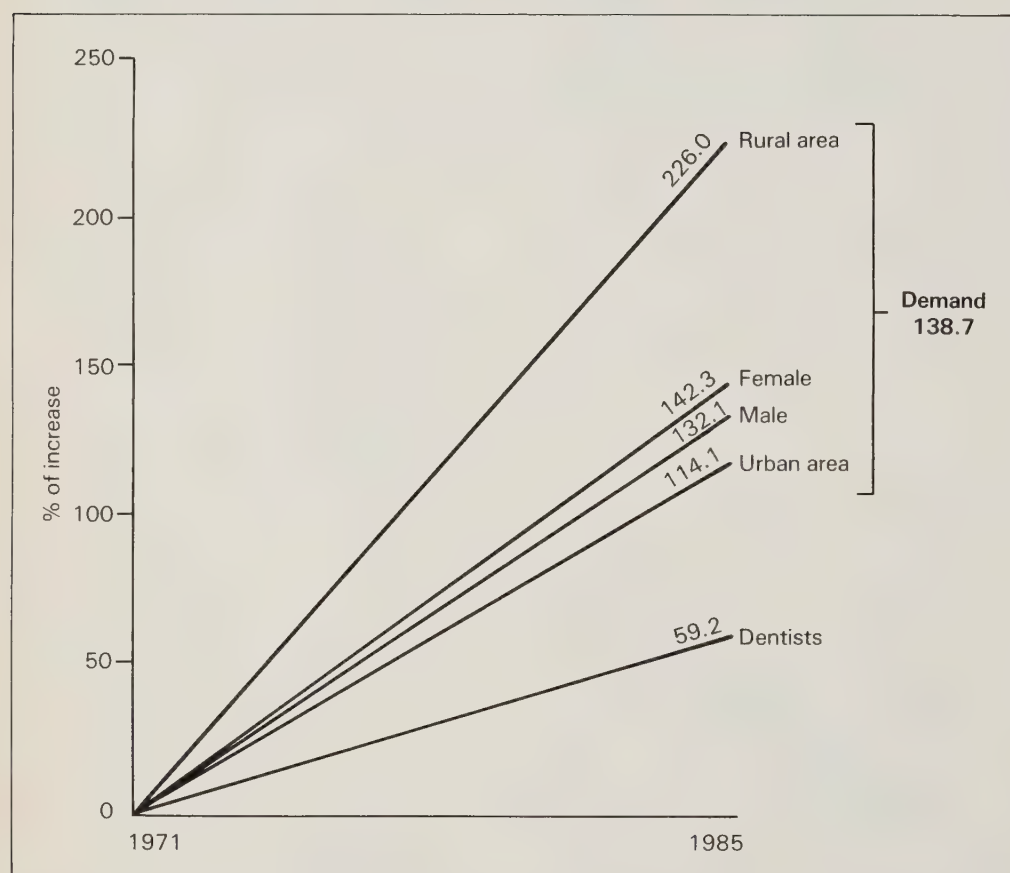


Fig. 5. Percent increase of dental manpower and of adults visiting the dentist twice or more annually.

20 to 49 years of age as the attendance reached 37.3 to 41.0 per cent. There was a sharp drop in the older groups when compared to the preceding groups, although their situation is much better than in 1971, since the 50-59 age group is at the level of the 20-29-year-old group

of 1971. These results indicate that the dental health of different age groups of adults has increased remarkably in the last 14 years, particularly among young and middle-aged adults.

Special attention was focused on adults who visited their dentist four times

TABLE II

Percentage of adults visiting the dentist four times or more annually for 1971 and 1985

Variable	1971	1985	Variation
M	7.2	8.7	+20.8
F	5.4	9.4	+74.1
Urban	7.5	9.7	+29.3
Rural	3.3	6.5	+97.0
Total	6.3	9.0	+42.9

or more annually in 1971 and 1985 (Table II). Generally speaking, this group is a rather small proportion of the total population visiting the dentist. In 1971, 6.3 per cent of the population attended the dental office four times or more, and 9.0 per cent in 1985 — a 42.9 per cent increase. This increase is taking place among women (74.1 per cent), particularly among adults in rural areas (97.0 per cent). This group presumably includes patients receiving extensive restorative treatment or being under close supervision.

Discussion

The evolution of dental visits in Quebec over the past years is similar to that observed in Great Britain.^{5,6} The variation in dental visits and population break down according to sex and age are also similar to those found in Finland⁷ and in the United States.⁵ However, the growth is more noticeable in Quebec where the utilization of dental services was previously lower. The results show that the increase in demand for dental care exceeded the increase in dental manpower.

Furthermore, there is no assurance that the rate of increase in the number of dentists will remain at 59 per cent over the next few years. In Canada, as a whole, the increase predicted between 1981 and 2001 is slightly under 40 per cent.² These authors expect Quebec to lose a number of dentists, trained in Quebec, to other parts of Canada. They also predict that the number of immigrant dentists in Canada will decrease.

The increase in dental manpower is expressed in terms of dentists and does not take into account the auxiliary personnel and other factors contributing to the dentist's productivity. In 1971, there were few dental hygienists in Quebec. After 1975, graduates in dental hygiene from the community colleges became available to the dental profession; they

were graduating at the rate of 120-140 per year. In 1985, there were more than 1,000 dental hygienists working in dental offices. This has been a major factor in the productivity of dentists who, otherwise, could not have coped with the increase in demand for services.

The increase in demand for dental care cannot be attributed to a single factor, and there are many influences on the spectacular changes which occurred between 1971 and 1985. The changes which characterized the practice of dentistry in the last decades had a marked impact during the period surveyed in this study. In 1971, the majority of Quebec dentists had been trained in the 1940's and '50's and were practising according to postwar standards, mainly based on operative dentistry, surgery and prosthodontics. In 1985, the majority had been trained in the '60's and '70's and their practice was more prevention oriented. In addition, the advances in dental technology, particularly endodontics, periodontics and pain control, have changed the practice of dentistry and the image of the dentist, making him/her more acceptable. To these qualitative factors can be added some quantitative aspects of the dental profession; the 59 per cent increase in dental manpower involves a better distribution. Heavily concentrated in the Montreal metropolitan area and other large cities in the Province of Quebec, until 1975, dentists have since established their practices in smaller cities, with the result that the same population now has better access to dental care. Better availability of dental services is known to have an effect on dental demand.⁸

Without underestimating the importance of efforts to improve the quality of dental care and make dental services more easily available, social and economic factors have made the population, especially the middle and upper middle classes, more appreciative of dental health and more eager to obtain dental services. Dental health education through the media and other sources and the economic prosperity of the 1970s have had a major impact. Indirectly but of no less importance was the public dental care program for children, which has influenced parents, who, having free dental care for their children, could afford more for themselves. The program initiated in 1974 provided a substantial coverage until 1982. Other less distinguishable factors bound to the spread of information and the increased level of education have also lowered the barrier between the public and the dental profession.

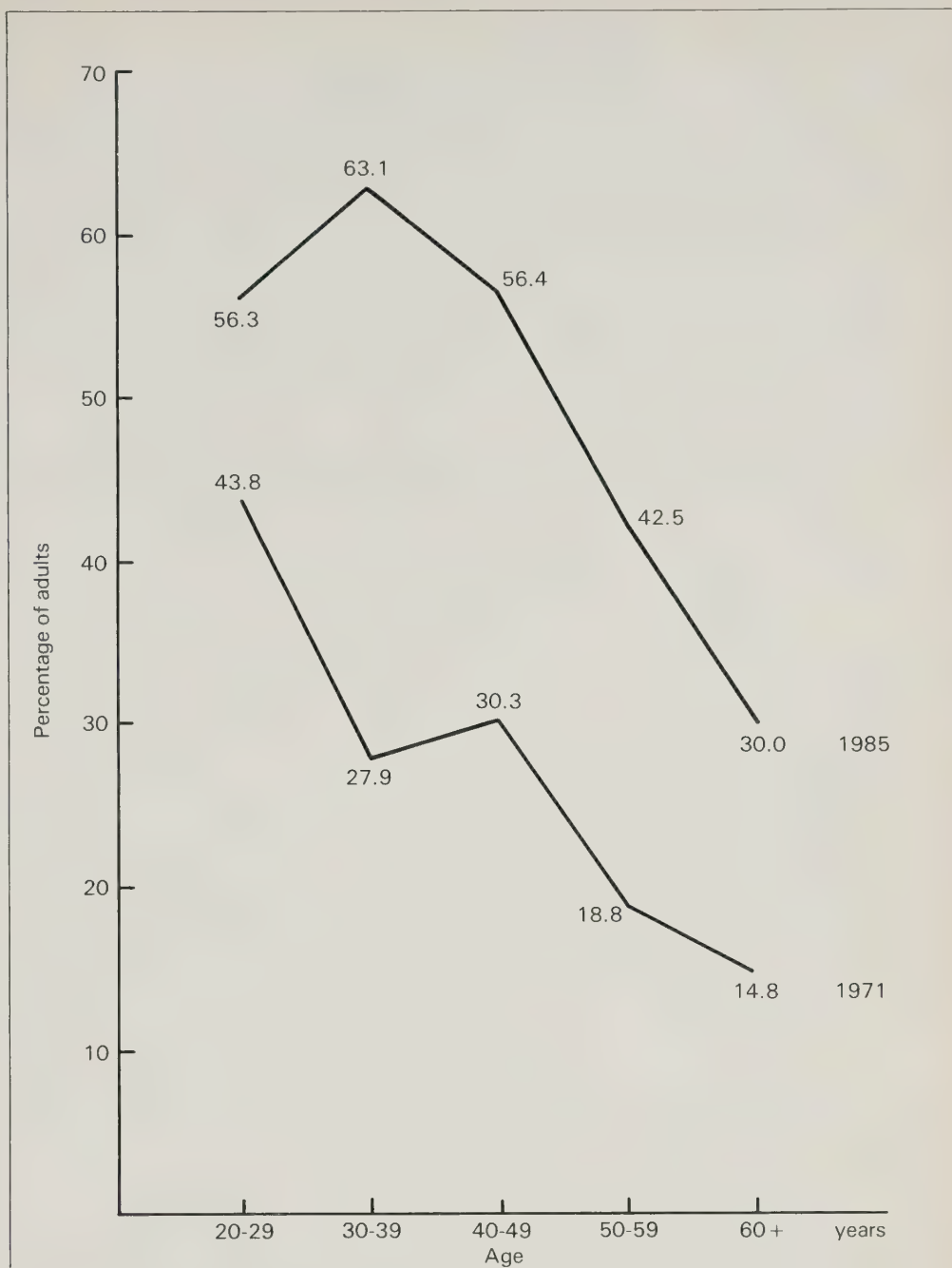


Fig. 6. Percentage of adults visiting the dentist annually according to age in 1971 and 1985.

The time lapse before the last dental visit and the number of annual visits is only a fraction of the estimate of utilization of services. It does not indicate whether the number of treatments has increased. Changes in the prevalence of dental disease are also bound to have an effect on clinical practice. A diversity of opinion was given to that effect. The anxiety felt was mostly due to the decline in caries: there is an indication of a drop of 33-40 per cent in Canada in the last decade.³ This drop is noticeable, especially with regard to missing teeth and smooth surface decay. The proportion of children with no caries experience has also increased considerably.³ However, the prevalence of decay in Quebec is twice

as high as in Ontario; the number of extracted teeth per child is also higher compared to the United States.⁹

We can expect an increase in the number of adults who will keep their natural teeth. According to Douglas and Gammon,¹⁰ this factor will have the most effect on future dental treatment needs; taking into consideration the increase in population who have their natural teeth, we can predict an increase in the number of adults at risk to dental disease. According to their predictions for the year 2001, there should be an increase of at least two million hours of caries treatment in Canada, in adult populations, despite a decline in caries prevalence among children and young adults.¹¹ This increase

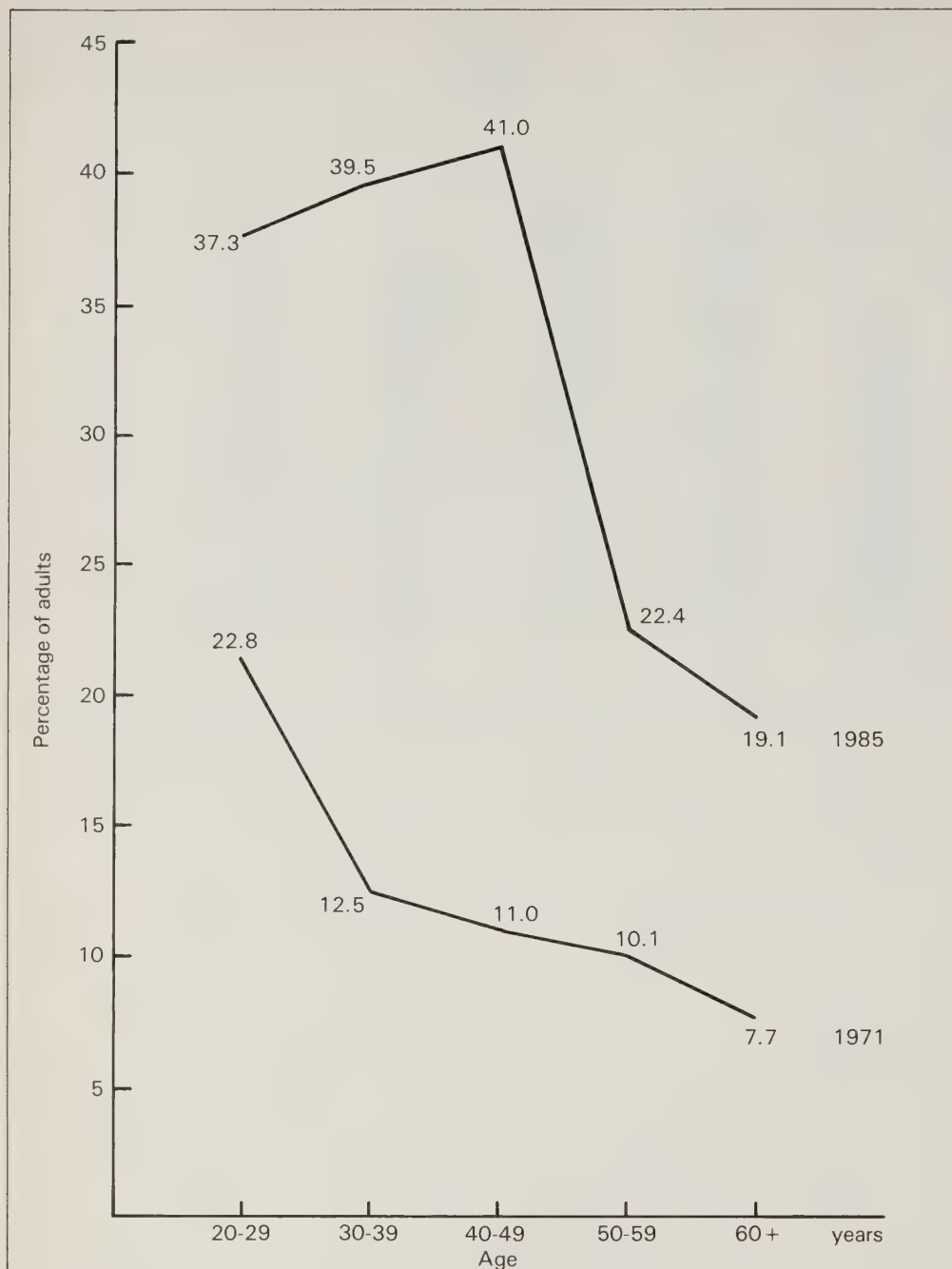


Fig. 7. Percentage of adults visiting the dentist twice or more annually according to age in 1971 and 1985.

will be even greater if the percentage of the population with natural teeth increases. An increase of 6.7 million hours of periodontal treatments over the same period is also predicted.

Lewis² argues over these results because he disagrees with the way in which the authors have set the met and unmet needs. According to his predictions concerning supply and demand of dental visits in Ontario, there would be in that province an excess of supply of 1.5 million visits in 1981, and of 4.3 million in 1996.³

We predict changes in the nature of needs to meet in the future, brought about by a decrease in treatment and in periodontal diseases. The World Health

Organization anticipates the restoration needs to drop progressively in industrialized countries;¹² this should leave more room for preventive treatments and other services by dental hygienists.³ We should therefore see a polarization in treatment needs, i.e. preventive treatments for the young cohorts and more complex restorative treatments for increasing dentally aware middle-aged and elderly.¹²

Conclusion

From 1971 to 1985, the dentist-population ratio has increased by 59.2 per cent. At the same time, the percentage of adults who pay annual visits to their dentist has gone up by 76.4 per cent and the percentage of those who

visit their dentist at least twice annually has increased by 138.7 per cent. For those who visit their dentist more than four times a year, it has gone up by 42.9 per cent – which is still lower than the dentist-population ratio increase over the same period. Increases in demand were observed in all age groups. In most age groups, the participation in 1985 doubled that of 1981.

The indicators used to assess the demand show that the offer in dental services is equivalent to or superior to demand. Then, how do we explain the anxiety felt by dental practitioners over the last few years? The data presented in this article correspond to two points in time – 1971 and 1985. The increase in demand might, thus, not be linear; it might have been higher before 1982 and has now reached a plateau. The measures used to determine supply and demand may not have been adequate. The increase in dental team productivity and a decrease in services required at every visit might very well be the determining factors. To that effect, complementary research and annual offer and demand studies should be instituted. In the meantime, the measures taken to reduce applications to dental schools should be slowly and cautiously implemented, taking into account that about 50 per cent of the adult population still do not visit their dentist annually and that the increase in the demand for dental services should not be stopped. Δ

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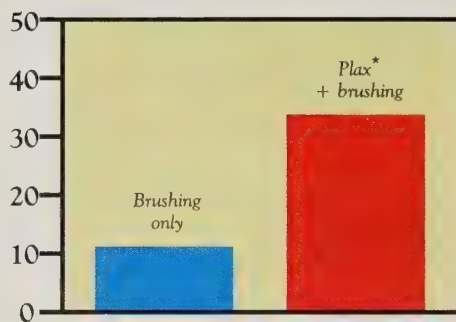
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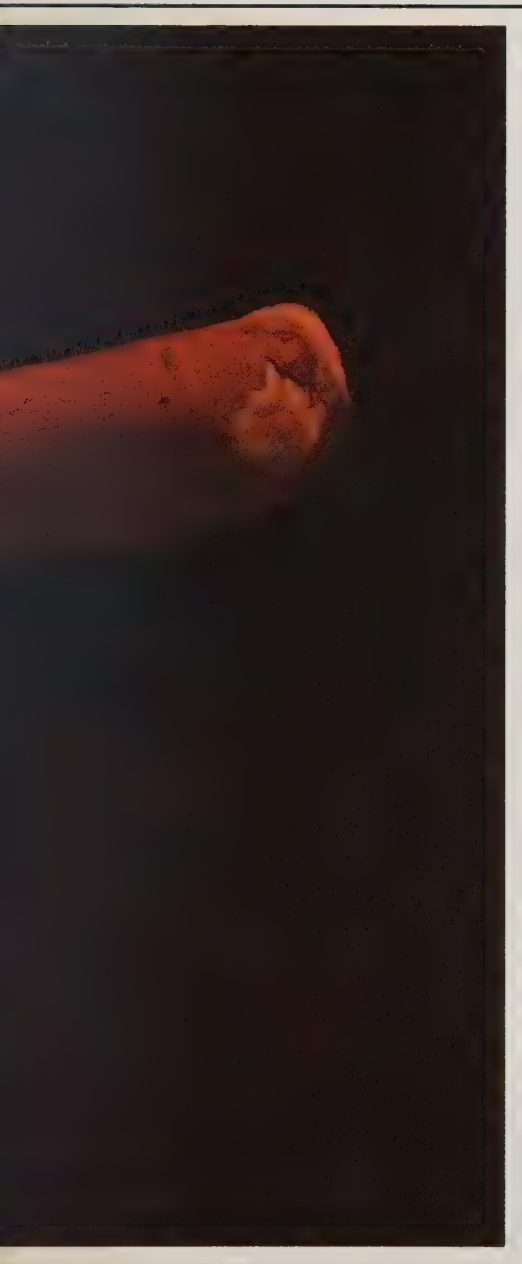
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PERMANENT MESIODISTAL TOOTH SIZE OF FRENCH-CANADIANS

Peter H. Buschang, BA, MA, PhD
Arto Demirjian, MScD, DDS
Louis Cadotte, DDS
Montreal

ABSTRACT

Permanent mesiodistal tooth diameters of French-Canadian males and females are described. Variation in tooth size within the sample follows expected patterns. In comparison to commonly used North American reference samples the incisors and first molars of French-Canadians are most often significantly larger. The findings imply that separate standards for tooth size are required for French-Canadians. The application of clinical methods routinely used to evaluate relative tooth size and to predict permanent tooth size may also need to be re-evaluated.

SOMMAIRE

Cet article décrit le diamètre mésio-distal des dents permanentes de garçons et filles Canadiens français. La variation de la largeur des dents, à l'intérieur de l'échantillon, se comporte de façon prévisible. Comparées aux échantillons nord-américains, les incisives et les premières molaires des Canadiens français sont

significativement plus larges. Ces résultats démontrent la nécessité d'utiliser des normes distinctes d'évaluation du diamètre des dents des Canadiens français. De plus, il conviendrait peut-être de réévaluer la pertinence des méthodes cliniques utilisées présentement pour déterminer la largeur relative des dents et prédire la largeur des dents permanentes.

Variation in permanent mesiodistal tooth size has been established within^{1,2} and between²⁻⁷ populations. Reference standards for North Americans of Northwest European ancestry are based on samples from Southwest Ohio⁴ and the Boston-Wilmington area.⁵ Tooth sizes reported for these two samples are comparable, with the exception of the maxillary first molars. The application of these standards to the various ethnic groups comprising North American Caucasians remains a subject of further investigations.

French-Canadians differ from other North Americans and Europeans in terms

of body size^{8,9} skeletal maturation¹⁰ and patterns of dental eruption.¹¹ French-Canada was founded by approximately 10,000 immigrants during the French Regime (1608-1760). While further studies are necessary to substantiate the original patterns of variation, the homogeneity of the parental population might be expected to be preserved in their descendants.¹² This implies a genetic basis for the observed differences in growth and maturation.

The present study describes the mesiodistal, permanent tooth diameters of French-Canadian males and females. Its objective is to compare the results with North American reference data and establish whether population specific standards are required for French-Canadians.

Materials and Methods

The data were derived from a longitudinal series of dental models collected by the Human Growth Research Centre, Université de Montréal. The study sample and sampling techniques have been previously described.⁸ A sub-sample, includ-

ing 83 girls and 96 boys, with all of their permanent incisors, canines, premolars, and first molars fully erupted, was selected for the analysis.

The mesiodistal crown diameters were measured as the greatest distance

between approximate surfaces, as observed or estimated when teeth were rotated or poorly aligned.¹³ Measurements were taken parallel to the occlusal and vestibular surfaces of the crown. Partially erupted teeth, teeth with restora-

tions in the measurement region, carious teeth, teeth showing impression flaws, and those displaying an abnormal morphology were excluded from the study. Mesiodistal tooth diameters were computed as the means of the right and left sides.

The measurements were all taken by the same technician, using helios dial calipers fitted with sharpened tips. Method errors (Table I) show that differences between replicates range between 0.06 to 0.14 mm. These values compare favorably with those reported by Townsend and Brown,² Seipel,¹³ and others.^{3,14}

To test the hypothesis of no differences between French-Canadians and other North Americans, tooth sizes were compared to values reported by Moorrees et al³ and by Garn and co-workers.⁴ An approximate test of equality of means,¹⁵ based on the assumption of heterogeneity of variances, was used to evaluate differences of means.

TABLE I

Method Errors (mm) for Mesiodistal Measurements of the Permanent Dentition

Tooth	Arch	
	Maxillary	Mandibular
I1	0.08	0.06
I2	0.10	0.06
C	0.07	0.10
Pm1	0.08	0.08
Pm2	0.07	0.09
M1	0.14	0.14

*Method Error = $\sqrt{\frac{\sum(X1 - X2)^2}{2n}}$

TABLE II

Descriptive Statistics for Permanent Mesiodistal Tooth Size of French-Canadian Males (M) and Females (F)

Tooth	Sex	N	Mean (mm)	Median (mm)	S.D.	C.V. (%)	Skew	Kurt.	Sexual Dimorphism	
									(mm ¹)	(% ²)
MAXILLA										
I1	M	90	9.01	8.95	0.48	5.3	0.56*	1.14*	0.28**	3.2
	F	85	8.67	8.65	0.54	6.2	0.35	-0.50		
I2	M	90	7.05	7.00	0.43	6.1	0.21	-0.41	0.35**	5.2
	F	79	6.70	6.72	0.49	7.3	0.02	-0.42		
C	M	86	8.06	8.03	0.34	4.2	0.19	-0.55	0.44**	5.8
	F	73	7.62	7.58	0.32	4.2	0.33	0.14		
Pm1	M	85	7.21	7.22	0.37	5.1	0.04	-0.29	0.25**	3.6
	F	74	6.96	6.95	0.36	5.2	0.28	0.76		
Pm2	M	79	6.91	6.92	0.38	5.5	0.11	0.14	0.23**	3.4
	F	70	6.68	6.70	0.35	5.2	0.08	0.12		
M1	M	79	10.90	10.88	0.45	4.1	0.17	-0.03	0.38**	3.6
	F	71	10.52	10.52	0.46	4.4	0.03	-0.26		
MANDIBLE										
I1	M	92	5.58	5.53	0.29	5.2	0.35	-0.08	0.15**	2.7
	F	86	5.43	5.49	0.29	5.3	-0.27	-0.53		
I2	M	93	6.18	6.18	0.34	5.5	0.24	-0.15	0.24**	4.0
	F	86	5.94	5.93	0.31	5.2	0.25	-0.81		
C	M	88	7.13	7.14	0.32	4.5	-0.05	-0.49	0.50**	7.5
	F	78	6.63	6.66	0.32	4.8	0.20	0.99		
Pm1	M	83	7.28	7.28	0.36	4.9	0.49*	-0.04	0.23**	3.3
	F	76	7.05	7.02	0.38	5.4	0.62	0.56		
Pm2	M	63	7.38	7.45	0.36	4.9	0.29	0.34	0.27**	3.8
	F	61	7.11	7.12	0.39	5.5	0.57	1.14		
M1	M	75	11.51	11.52	0.52	4.5	-0.02	1.14*	0.43**	3.9
	F	60	11.08	11.08	0.49	4.4	-0.01	-0.41		
					* 0.01 < prob. < 0.05					
					** prob. < .001					
					¹ males-females			² (males/females) - 1.0		

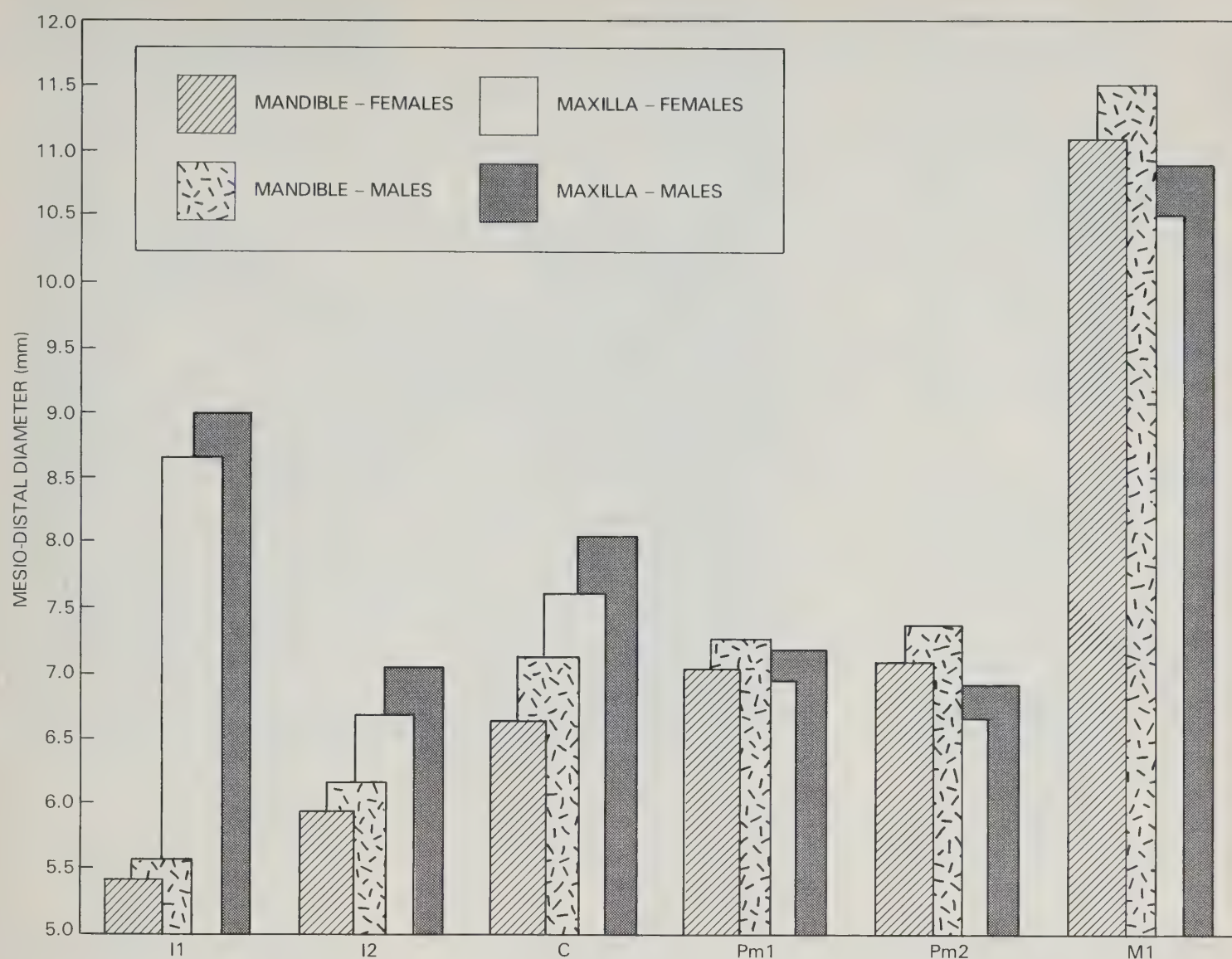


Fig. 1. Permanent mesiodistal tooth sizes for French-Canadian males and females.

Results

Table II presents the descriptive statistics for mesiodistal tooth size of French-Canadians. Two of the 24 distributions show significant (probability < 0.05) departures from normality. Coefficients of variation are highest for the incisors. The first molars and canines are the least variable teeth measured; they show the greatest size stability. Paired t-tests reveal that the maxillary incisors and canines are larger (prob. < 0.05) than their mandibular counterparts. Posteriorly, the mandibular premolars and molars are larger than the corresponding maxillary teeth (Fig. 1).

Males have significantly larger teeth than females. Dimorphism ranges from 0.15 mm (2.7 per cent) to 0.50 mm (7.5 per cent). Sex differences are greatest for the canines, particularly the mandibular canines. The mandibular central incisors are the least dimorphic. Mesio-

TABLE III

Differences (mm) in Mesiodistal Tooth Diameters Between French-Canadians and other Northwest European Populations

Tooth	Ohio ⁴		Boston-Wilmington ³	
	Females	Males	Females	Males
MAXILLA				
I1	0.17	0.23*	0.27*	0.23*
I2	0.23*	0.34**	0.23*	0.41**
C	0.11	0.11	0.09	0.11
Pm1	0.06	0.06	0.11	0.20*
Pm2	0.08	0.07	0.06	0.09
M1	0.71**	0.73**	0.08	0.09
MANDIBLE				
I1	0.12*	0.20**	0.18*	0.16*
I2	0.08	0.16*	0.16*	0.23**
C	0.07	0.15*	0.16*	0.17*
Pm1	0.05	0.01	0.17*	0.21**
Pm2	0.08	0.12	0.09	0.09
M1	0.22*	0.13	0.34**	0.33**

* prob. < 0.05

**prob. < 0.01

distal size differences between males and females add up to approximately 1.9 mm for the maxilla and 1.8 mm for the mandible.

Table III shows that permanent teeth of French-Canadians are usually larger than other North American samples. Size differences range between 0.0 mm and 0.7 mm. For the incisors, 14 of the 16 comparisons attain significant levels (prob. < 0.05). The first molars are significantly larger for five of the eight comparisons. Cumulatively, the size differences range from 0.8 mm to 1.5 mm for the maxilla and between 0.6 mm and 1.2 mm for the mandible. Deviations appear to be larger for males than for females.

Discussion

The results clearly demonstrate differences in permanent tooth size between French-Canadians and other North American children. Size differences are not proportional across all teeth; they pertain primarily to the incisors and first molars. Moreover, variation appears to be more pronounced in the maxilla than the mandible, and males show greater size differences than females.

The findings provide French-Canadian reference data which were previously unavailable. Variability in relative tooth size, within and between jaws, follows expected patterns.^{2,5,6} In comparison with other populations, the coefficients of variation for French-Canadians are generally lower,¹⁶ which could reflect the relative small size of the gene pool. Sexual dimorphism compares favorably with values reported for other samples.²⁻⁴ The lower canines and incisors show the greatest and least dimorphism, respectively. The notion of a canine "field" proposed by Garn et al¹⁷ holds for the maxillary, but not the mandibular teeth.

In conclusion, existing North-American reference data for U.S. Caucasians do not appear to be appropriate for evaluating the permanent tooth size of French-Canadians; separate standards are required. Since size differences relate to the incisors and first molars, previously developed formulae and tables for predicting the size of the permanent canines and premolars during the mixed dentition¹⁸ may not be applicable. Such predictions might be expected to systematically overestimate the actual tooth size. Moreover, size differences between samples appear to vary across the two jaws, indicating that established proportions of upper to lower teeth¹⁹ commonly used in clinical work-ups may also need to be re-evaluated. Δ

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Dr. Cadotte was a fourth year student at the time of preparation of this article.

Reprint requests to Dr. Buschang.

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MAGNIFICATION DEVICES FOR THE PRESBYOPIC DENTIST

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INTRODUCTION

When visual ability is crucial to any task, the onset of reduced visual efficiency can be frustrating. Of the age-related changes of the eye, presbyopia is perhaps the most disturbing. It is the inability of the eyes to change focus from a distant object to a closer object and maintain sustained clear vision at the customary near working distance. This process of focusing to see near objects clearly is known as accommodation. Various factors including arm length, pupil size and the amount and type of close work can influence the age of onset of presbyopia.¹

INTRODUCTION

Lorsque la vision est importante pour accomplir une tâche, il peut être frustrant de perdre son acuité visuelle. De tous les maux qui affectent la vue avec l'âge, la presbytie est peut-être le plus inquiétant. Les yeux perdent leur habileté à s'ajuster des objets distants aux objets plus rapprochés et ne parviennent plus à garder une vision nette de tout ce qui entoure le sujet dans des conditions normales de travail. Pour bien voir les objets rapprochés, les yeux doivent s'y accommoder. Divers facteurs comme les courtes distances, la dimension des pupilles et le genre de travail exercé peuvent déterminer le développement de la presbytie.

Many of the changes in vision are attributed to normal age-related changes in the structure of the crystalline lens within the eyes. Throughout life, the size of the human lens increases as new layers are deposited over a core of older lens material in much the same manner as rings within the tree trunk. Normally, when an individual under age 40 accommodates for near vision, the ciliary muscle within both eyes contracts and causes the anterior lens surface to assume a more spherical shape than the usual flat shape of the lens used for distance viewing. The lens thickens and has greater power to bend light rays diverging from the object of regard to a focus on the retina. With age, the magnitude of this ability (the amplitude of accommodation) decreases progressively as the lens becomes less flexible to assume a spherical shape. Therefore the light rays will focus at a point farther from the cornea and at the retina there is a blurred image of the object. This translates into the eyes seeing a blurry object. In order for the eyes to see an object clearly, the target must be further back. This maximum distance where an object can be brought closer to the head and seen clearly is called the near point of accommodation. As the amount of accommodation decreases further, this near point recedes progressively further from the eye. The amplitude of accommodation declines linearly with age and reaches zero at about age 61.² However, this decline is

slightly offset by the age-related constriction of the pupil (senile miosis). The smaller pupil allows an object to be moved closer to or farther away for a greater than normal range of distances (called the depth of field) and the object will still appear clear. Without these depth of field and depth of focus effects, the amplitude of accommodation reaches zero at about age 52.³

There are also changes in the structure of the lens that cause other visual changes accompanying presbyopia. The lens becomes less transparent as it yellows with age and absorbs light. Minute irregularities on the surface of various lenticular layers as well as the different optical properties of the various lens layers all contribute to increased light scatter that simulates a veiling glare.⁴ Between ages 50 and 80, the scatter of light in the lens is 16 times as great as it was at age 40, and 30 times as great during adolescence.⁵ There is also a simultaneous reduction in the size of the pupil (senile miosis). These three factors cause a total reduction in the amount of light striking the retina. This decrease in retinal illuminance results in reductions in various visual responses. The lenticular yellowing filters out blue light and a presbyope has decreased hue discrimination and sensitivity to blue light.¹ Light scattering within the eye decreases the contrast of objects and detection or sensitivity to contrast.^{6,7} Dimmer objects cannot be seen as easily and since the retina has

adapted to the lower light level, there is an increase in sensitivity to glare.⁸

In addition to these normal aging problems, dental practitioners face further difficulties. Unlike ophthalmic surgeons, who only have to work at basically one distance, the dentist has a variety of visual requirements: reading the patient's chart, reaching for instruments, viewing X-rays, and oral surgery all require different working distances and the dentist must function adequately and swiftly in all these demands. For many procedures, he requires excellent visual acuity, which is the ability to see or resolve fine detail. Restorative procedures such as cosmetic bonding with its stages of design, build-up, contouring, finishing and polishing of a tooth is one example. Since the material is very similar to tooth enamel, contrast is decreased and margins are bothersome, sharp edges and imperfections are increasingly obscured by polishing.⁹ Motion of the dentist's head or eyes can improve the contrast sensitivity, but this compensation also decreases with age.^{6,10} Also miniaturization of orthodontic appliances, molar endodontics and surgical or restorative procedures demand good acuity.⁹ Examination of fractures or residual root apices and other lesions become more difficult for the presbyope. Good depth perception and binocularity are needed in the delivery of sutures.¹¹ These special needs of dentists augment their problems of presbyopia.

As presbyopia begins, the dentist has blurry vision of near objects and his near point progressively recedes. Therefore, he has two options to achieve the necessary visual acuity. One temporary method is adequate lighting of both the immediate work area and the general lighting. At a higher level of illumination, the pupils constrict and increase the depth of focus and the depth of field.^{9,12,13} This also compensates for the decreased retinal illuminance. When an object and its background are illuminated by a common source of light out of the field of view, vision in general is improved.¹⁴ Ferguson¹⁵ found that dental office lighting of 2700 lux (250 ft-candles) at the bracket table is sufficient for examination of small objects. He suggests that the colour of the office walls should be light to reflect the ambient light and neutral in order to avoid modification of the colour and amount of the illumination. Use of full-spectrum fluorescent tubes that approximate northern sky daylight can prevent changes in a colour tone that occur with normal fluorescent tubes. In the choice of a shade, the dentist should check that metamerism (the

change in colour match of two colours under different types of illumination) is not present. Testing is done with consecutive illumination from fluorescent and incandescent lighting.¹² Accessory lamps such as quartz halogen lamps or fiberoptic bundles on handpieces can provide extra illumination.

However, increased illumination has its drawbacks. As illumination is increased in the work area, increased contrast can cause eyestrain and discomfort glare. Visual fatigue results from repeated adjustment of your eyes to lower light levels in the background area and therefore the general level of ambient lighting must be increased in the same proportion to relieve the visual fatigue.¹⁴ When dental or surgical lights reflect off tooth enamel, disability glare is produced.¹¹ If the luminance levels are very high, glare is introduced causing disability. In the presence of scotomatic glare, there is a temporary visual loss following prolonged exposure to intense light. Small pupils and advanced lenticular yellowing aggravate the reflective glare, and this increased glare sensitivity starts at about age 40. To overcome the loss in visibility, the contrast between figure and ground has to be increased or the size of the object must be increased. When the glare luminance is between 1 and 15000 mL, the luminance of the target must be increased.⁸ However, high contrast is critical for optimum performance on visual tasks that demand resolution of fine detail for long observation periods.¹⁶ For the dentist with some accommodative ability, image contrast determines accommodative accuracy¹⁷ since small details are poor accommodative stimuli and contribute little to proper accommodation.¹⁸

Increased illumination is only a temporary solution possible at the onset of presbyopia. In a survey of 41 dentists over age 35, 36 of them had spectacles for defective eyesight.¹⁹ Later correction of presbyopia with bifocals or trifocals is necessary. These lenses have a segment (the addition) which has more power to focus for closer ranges and this addition essentially replaces the natural accommodation of the eye by shifting the focal distance. However, the addition is focused for a specific range of distance and not a continuous range. The dentist might find that the addition restricts his work at a precise working distance. The power of the corrective lens is measured in dioptres, which is the reciprocal of focal length in metres. When accommodative ability decreases further with age, the dentist will require stronger reading additions and therefore the focal length and

working distance decrease accordingly. The dentist must work within the range of distance and often must bend over, and can experience ocular discomfort and back fatigue due to this compromise of comfortable posture. Coburn⁹ suggests three possible operating concepts: concept A involves working at 11 o'clock for much of the work, e.g., quadrant 1, 2 or 3, and sometimes moving to the 8:30 position to work on quadrant 3 or 4. The latter position requires the dentist to work well off the midline of his own body and at a longer working distance (focal distance) for postural reasons.

Concept B involves working in the 9-11 o'clock position in order to work on each of the four quadrants of the mouth. This approach tends to encourage the use of direct vision on the upper as well as the lower quadrants. Compromised operating posture is involved and this approach becomes less acceptable as the operator becomes older and has to function at a shorter fixed distance using an addition required for near vision (40 cm). The luxury of working at a longer focal distance when visual requirements are less demanding, e.g., condensing an amalgam, is no longer available to the older practitioner.

Concept C involves using the 11:30-12:30 approach in the 'home operating position', which enables the operator to select a working distance that suits posturally. Then following recommended patient orientation for each area of the mouth, the operator is able to work comfortably using direct vision on the lower arches and reflected vision on the upper. By using this method, the more rigid focal distance of the older dentist may be accommodated with uncompromised posture. For the same reasons, Concept C lends itself to the effective use of surgical telescopes for magnification.

If the dental operator's head is tipped sideways when wearing surgical telescopes, a degree of vertigo or even nausea may be induced. For this additional reason Concept C would seem to be the most advantageous.

The addition of high strength reading spectacles or 'half eyes' have the same disadvantages as a magnifying loupe placed close to the eye. Because of the restrictions in working distance, many dentists prefer to use magnification devices which provide greater visual acuity without compromise of posture. Postures and habits developed in earlier years are no longer suitable for the presbyopic dentist. He can no longer sit back comfortably and move in closer to achieve magnification for more precise

detailed work. This causes increased physical fatigue at a time when his overall skeletal and muscular flexibility are decreasing.^{9,12} Monocular loupes are available but monocular viewing does not allow for stereopsis (depth perception).

Binocular loupes are therefore strongly suggested. There are various types of aids.^{9,11} Galilean telescopes which can flip up, such as Miltex loupes, are small and easy to carry around. However, they have the disadvantages of higher costs, extra distortions, less light transmission through the multiple lens system, narrower field and the effect of disorientation and possible vertigo while walking around. Surgical telescopes are also available. These are fixed-focus systems mounted directly in the reading portion of the carrier lens. The standard working distance for the binocular varies from 14 to 16 inches but can be modified to any distance from 8 to 20 inches. The 2.5X surgical binoculars have rectangular objectives resulting in a square field of view of four inches on each side, a working distance of 16 inches, a field of view of nine inches and a depth of focus of three inches. The 4.5X surgical binoculars provide higher magnifications for a working distance of 16 inches but limits the field of view to one inch on each side with a depth of focus of two inches.²⁰ All units are angled downwards on the carrier lens to prevent any jumps or darting motions of the hands or instruments in the operating area. Also, the dentist will see an apparent slowness in the speed of his drill as well as increased ability to see around corners. The distance prescription is set in the upper part of the bifocal and the dentist can use portions around the telescope for a somewhat blurry intermediate and near vision. With these units, the telescopes are placed as close as possible to the eyes to attain the largest field of view and block out stray light and reflections. Slight inaccuracy in position or fixation can cause disorientation and vertigo.

The ideal devices are positive lenses mounted on a hinged bar that attaches to eyeglass frames or a headband. Since the lens is farther from the eye, there is increased angular magnification compared to a lens of similar strength situated close to the lens. However this increased magnification is not accompanied by the distortions and aberrations of a stronger lens. The distance of the loupe from the eyes allows the dentist to look around the lens more easily and therefore minimize the vertigo or disorientation effects of powerful lenses mounted close to the eye. The headband type is bulky but this is off-

set by advantages of minimum distortion, maximum flexibility and adjustment to arrive at the ideal lens distance for various visual demands.^{9,12} Any of these positive lens loupes can be made from two types of lens design — double-convex (spherical) lenses or convex-concave (meniscus) lenses. With spherical lenses, light coming from behind the head can reflect off the lens into the eyes. With the meniscus lens, light is reflected off the concave surface of the lens away from the eye.¹² Antireflective coatings can increase the contrast sensitivity of the eyes in the presence of glare²¹ and therefore can be beneficial.

Summary

There are magnification aids to help the presbyopic dentist. Lighting adjustments are temporary measures only. Because of the variety of different working distances, various magnification devices allow the dentist to continue operating in established body postures without adapting to visual restrictions. Δ

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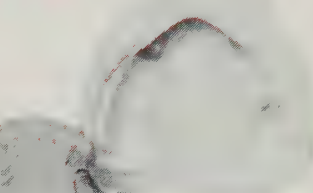
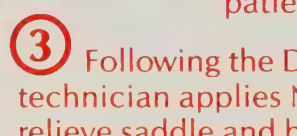
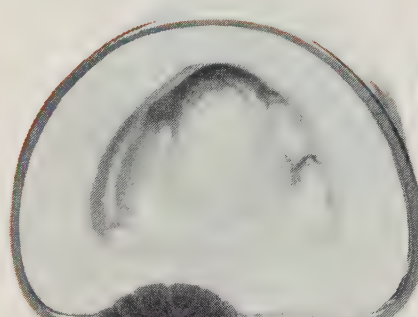
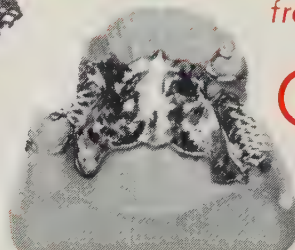
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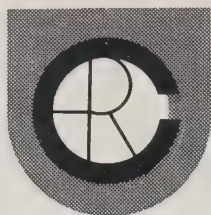
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Announcements

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July 1-3: British Dental Association's Annual Conference, Harrogate International Conference Centre, Harrogate, Yorkshire (UK). "Facing the Future". Contact: Linda Bridges, Conference Office, 64 Wimpole St., London, England. W1M 8AL.

July 1-3: Florida National Dental Congress sponsored by the Florida Dental Association will be held at the Marriott's Orlando World Center, Orlando, FL. For more information, contact: Betty Waggener, Director, Florida National Dental Congress, 3021 Swann Ave., Tampa, FL 33609 U.S.A. Tel: (813) 877-7597.

July 4-5: 41st Scandinavian Dental Congress. For details, write: Icelandic Dental Association, P.O. Box 8596, 128 Reykjavik, Iceland.

July 7-10: Annual Congress of the European Organization for Caries Research in Angers, France. For details, contact: Prof. RZM Triller, Université René Descartes, Faculté de Chirurgie dentaire, 1 rue Maurice Arnoux, 92120 Montrouge France.

July 15-20: Academy of General Dentistry at the Hyatt Regency in Chicago, Illinois. For registration information, contact: Ms. Debbie Jepsen, 211E Chicago Ave., Chicago, IL 60611 (312) 440-4300.

July 25-28: 4th International Symposium on Performance Logic and Performance Simulation Training in Dentistry: Balance in Practice at the University of British Columbia, Faculty of Dentistry in Vancouver. Speakers from the United States, Canada, South America and Asia. For information, contact: Dr. Lance Rucker, Coordinator, Performance Simulation Laboratory, The University of British Columbia. Telephone (604) 228-4663.

August/Août 1988

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August 5-6: International Congress of Laser in Dentistry at the Tokyo Prince Hotel in Japan, sponsored by the Japan Society for Laser Medicine. For further information, contact: Secretariat of I.C.L.D. 1988, c/o International Congress Service, Inc, Kasho Building 2F, 2-14-9 Nihombashi, Chuo-ku, Tokyo 103, Japan.

August 5-7: Singapore International Dental Exhibition and Conference Dentistry's Challenges, AD 2000 and Beyond. For more information, contact: SDEC 88, Orchard Dental Centre Pte Ltd, 268 Orchard Rd, #05-07, Yen San Building, Singapore 0923.

August 7-11: American Association of Hospital Dentists at the Hershey Hotel in Philadelphia, Pennsylvania. For information, please contact: Dr. Manuel M. Album, 491 N York Rd, Jenkintown, PA 19046 U.S.A. (215) 887-3838.

August 7-11: Ninth Congress of the International Association of Dentistry for the Handicapped, Philadelphia, PA. Contact: Public Relations, (215) 576-2303, Abington Memorial Hospital, Abington, PA. 19001.

August 7-11: American Society for Geriatric Dentistry at the Hershey Hotel in Philadelphia, Pennsylvania. For information, contact: Dr. Manuel M. Album, 491 N York Rd, Jenkintown, PA 19046 U.S.A. (215) 887-3838.

August 8-10: 14th Annual Health Administration Forum at the Royal Ottawa Hospital in Ottawa. For more information, contact: Jehaangir Bulsara, Program in Health Administration, Room 255F, Vanier Hall, University of Ottawa, Ottawa, Ont. K1N 6N5 (613) 564-7017.

August 8-13: Preventive Dentistry and Epidemiology 1st International Conference sponsored by the Dental Health Center of Karlstad Sweden together with a Course on "Table clinics and demonstrations of preventive materials, programs and methods". For more information,

contact: The Preventive Dental Health Center, c/o Hjärnbruket, Box 9055, S-650 09 KARLSTAD, Sweden. Tel: 46 054-13 20 10.

August 12-14: 4th Annual A.C.O.I. Symposium sponsored by the American College of Oral Implantology and the International Congress of Oral Implantologists in Denver, Colorado. For further detail, contact: Margaret M. Jackson, Executive Director, I.C.O.I., 248 Lorraine Ave., 3rd floor, Upper Montclair, N.J. 07043 U.S.A.

August 13-14: 4th Annual ACOI Symposium: Implant Prosthodontics at the Park Suite Hotel in Nashville, Tennessee sponsored by the American College of Oral Implantology and the International Congress of Oral Implantologists. For information, contact: Margaret Jackson at (201) 783-6300.

August 18-20: Annual Meeting of the Canadian Academy of Prosthodontics at the Four Seasons Hotel in Edmonton, Alberta. Contact: Dr. Carl Osadetz, 1045 Dentistry/Pharmacy Centre, University of Alberta, Edmonton, Alta T6G 2N8 (403) 432-3631.

August 18-21: 26th Annual Scientific Congress of the Iranian Dental Association and 6th International Dental Exhibition at the Homa Hotel in Tehran, Iran. For details, write: Dr. Faramarz Alaie, Iranian Dental Association, International Section, PO Box 14155-3695, IR-Tehran 14, Iran.

August 19-21: 40th Annual Scientific Meeting of the Canadian Association of Orthodontists at the Fantasyland Hotel in Edmonton Alberta. "Future Perspective in Orthodontics". For more information, please contact: Dr. Terry Carlyle, #1525 Weber Centre, 5555 Calgary Tr. S., Edmonton, Alberta T6H 5P9. (403) 435-3641.

August 21-24: Canadian Dental Association's Annual Convention, at the Edmonton Convention Centre, Edmonton, Alberta. Contact: Linda Teteruck, Canadian Dental Association, 1815 Alta Vista Dr., Ottawa K1G 3Y6. (613) 523-1770.

August 21-25: New Zealand Dental Association's Biennial Conference, Christchurch, New Zealand. Contact: Dr. E.A. Cope, Conference Secretary, 200 Cashel Street, Christchurch 1, New Zealand.

August 21-27: Annual Congress of the German Dental Association in Meran, Italy. For information: Dr. Schultz, Bundesverband der Deutschen Zahnärzte e.V. Bundeszahnärztekammer, Universitätsstrasse 71-73, Postfach 410168, 5000 Cologne 41, Germany.

August 23-28: Dental Group Management Association at the Hyatt Regency in Vancouver, BC. For more details, contact: Ms. Joann Junkins, #3 Lakewood Gardens Lane, Madison, WI 53704 U.S.A. (608) 241-2109.

August 28-September 2: XIII World Conference on Health Education in Houston, Texas. For more information, write to United States Host Committee, XIII World Conference on Health Education, P.O. Box 20186, W-902 Stallones Building, Houston, Texas 77225, U.S.A.

August 29-September 7: Public Oral Health Planning in Malmo Sweden. For more information contact; Postgraduate Centre of Dentistry, Carl Gustafs vag 34, S21421 Malmo, Sweden.

September/Septembre 1988

September 1-4: 23rd Annual Odontostomatological Session at Hotel Alexander Beach in Alexandroupolis, Greece. For more information, contact: Dr. R. Koxapa-Damigos, Stomatological Society of Greece, Kallirroes 17, Athens 117 43 Greece.

September 4-10: 5th International Week for Dentistry in Istanbul, Turkey. For more details, write: Dr. Ozen Tuncer, University of Istanbul, Faculty of Dentistry, (Dishekimligi Fakultesi), TR-34390 Istanbul – Capa Turkey.

September 5-7: 11th International Conference on Oral Biology in Hong Kong. For more information, contact: International Association of Dental Research, 1111 14th Street NW, #1000, Washington, DC 20005 U.S.A.

September 7-9: Bristol 88 World Dental Conference University of Bristol, England, U.K. Decisions in Forward-Looking Oral Health Care. For information contact: Mr. B.P. Matthews, Bristol 88 World Dental Conference, University of Bristol, Senate House, Bristol BS8 1TH ENGLAND, U.K.

September 12-16: Osseointegration in Clinical Dentistry Clinical Training Course in Malmo, Sweden. For more information, contact: Postgraduate Centre of Dentistry, Carl Gustafs vag 34, S21421 Malmo, Sweden.

September 15-17: Clindent '88 Clinical Dental Conference in London, England. For details, contact: Clindent '88, 90 Harley St, W1N 1AF London, England.

September 15-18: American Academy of Gnathologic Orthopedics at Caesar's Palace in Las Vegas, Nevada. For more information, contact: Ms. JoAnna Carey, 211E Chicago Ave., Chicago, IL 60611 U.S.A. (312) 642-5834.

September 23-25: American Academy of Esthetic Dentistry at the Hyatt Regency Cambridge in Cambridge, Massachusetts. Contact: Ms. Cheryl Kraus, 211E Chicago Ave., Suite 948, Chicago, IL 60611 U.S.A. (312) 664-2122.

September 23-25: California Dental Association's Fall Scientific Session, San Francisco, California. Contact: Cissie Cooper, Director, Scientific Sessions, CDA, 818 "K" Street Mall, P.O. Box 13749, Sacramento, California, 95853-4749. (916) 443-0505.

September 29-October 1: New Orleans Dental Conference at the New Orleans Hilton, Poydras at the Mississippi River in New Orleans, Louisiana. For more information, contact: Ms. Normalee Ward, 3101 West Napoleon Ave., Suite 119, Metairie, LA 70001 U.S.A. (504) 834-6449.

September 29-October 2: Canadian Academy of Endodontics is holding its annual session at the Fantasyland Hotel, West Edmonton Mall in Alberta. All dentists are welcome. Contact: Dr. Tom Mather, #1107 – 10830 Jasper Ave, Edmonton, Alberta T5J 2B3.

October/Octobre 1988

October 2-5: American Academy of Maxillofacial Prosthetics at Stouffers Harborplace Hotel in Baltimore, Maryland. For more details, contact: Dr. Gregory R. Parr, Medical College of Georgia, School of Dentistry, Augusta, GA 30912 U.S.A. (404) 721-2554.

October 4-7: American College of Prosthodontists at Stouffer's Hotel in Baltimore, Maryland. For more details, contact: Ms. Linda Wallenborn, 1777 NE Loop 410, Suite 904, San Antonio, TX 78217 U.S.A. (512) 829-7236.

October 4-7: American Academy of Dental Radiology at the Sheraton Hotel, Washington, D.C. For details, contact: Dr. William Wege, Medical College of Georgia, Augusta, GA 30912 U.S.A. (404) 828-2935.

October 5-7: 51st Annual Meeting of the American Association of Public Health Dentistry in Washington, DC. For information: Dr. R.G. Rozier, Dept. of Health Policy, CB 8140, Kron Building, University of North Carolina, Chapel Hill, NC 27599-8140, U.S.A.

October 6-8: Academy of Dentistry International at the Sheraton-Washington Hotel in Washington, D.C. For information, contact: Dr. Clifford F. Loader, 7804 Calle Espada, Bakersfield, CA 93309 U.S.A. (805) 832-3236.

October 6-9: American Association of Women Dentists at the Grand Hyatt-Washington Hotel in Washington, D.C. For information, contact: Ms. Cheryl Kraus, 211 E. Chicago Ave., Suite 948, Chicago, IL 60611 U.S.A. (312) 337-1563.

October 8-14: ADA/FDI Joint 1988 World Dental Congress Dentistry: Caring for the World at Washington, D.C. For more information, contact: Congress Secretariat, ADA/FDI Joint 1988 World Dental Congress, c/o American Dental Association, 211 East Chicago Ave., Chicago, Illinois 60611 USA or FDI Headquarters, Fédération dentaire internationale, 64 Wimpole St., London W1M 8AL, United Kingdom.

October 9-14: International Workshop on Cranio-facial Trauma sponsored by the Australian Cranio-Maxillo-Facial Foundation. For information, contact: Mrs. D. Moody, Executive Officer, 226 Melbourne St., North Adelaide, S.A. 5006, Australia.

October 10-15: American Academy of Implant Dentistry at the J.W. Merriot Hotel in Washington, D.C. For registration information, contact: Mr. John P. Winiewicz, P.O. Box 2002, Abington, MA 02351 U.S.A. (617) 878-7990.

October 12-16: American Society of Dentistry for Children at the Sheraton Bal Harbour, Bal Harbour, Florida. For information: Ms. Lana Wos, 211 E Chicago Ave, Suite 920, Chicago, IL 60611 U.S.A. (312) 943-1244.

October 17-21: Clinical and Radiological Diagnosis of the Temporomandibular Joint in Malmo Sweden. For more information, contact: Postgraduate Centre of Dentistry, Carl Gustafs vag 34, S21421 Malmo, Sweden.

October 19-21: Annual Conference of the Canadian Society of Forensic Science at the Westbury Hotel in Toronto. Theme: Advances in Technology: The Impact on Forensic Science. For further information, please contact: Canadian Society of Forensic Science, 2660 Southvale Cres, Suite 215, Ottawa, Ont. K1B 4W5 (613) 731-2096.

October 25-27: Medical/Hospitech 88 — 2nd International Medical, Hospital and Dental Equipment and Facilities Exhibition in Bangkok, Thailand. For more information, contact: SHK International Services Ltd., 22/F., 151 Gloucester Rd., Hong Kong. Telephone: 5-8326100.

October 26-29: American Academy of Periodontology at the Sheraton Harbor Island Hotel in San Diego, California. Contact: Ms. Jean Pierson, 211 E Chicago Ave, Suite 924, Chicago, IL 60611 U.S.A. (312) 787-5518.

October 26-29: 42nd Annual Meeting of American Academy for Cerebral Palsy and Developmental Medicine Deadline for free papers: February 12, 1988. Royal York Hotel, Toronto. INFO: AACPDM, P.O. Box 11086, Richmond, Virginia 23230 USA.

October 27-31: 23rd Indian Orthodontic Conference followed by Post Conference Workshop at the Manali Hill Resort. For details and registration forms, contact: Dr. Pradip Jayna, Organising Secretary, 23rd I.O.C., M-75, Connaught Place, New Delhi - 110001, India. Phone: 332-9516 or 9517.

October 28–November 1: American Institute of Oral Biology in Palm Springs, California. For details: Dr. Philip J. Boyne, Dept. of Surgery, Loma Linda University Medical Center, Loma Linda, CA 92350 U.S.A. (714) 824-4671.

November/Novembre 1988

November 10-13: Joint Meeting of the Canadian and American Pain Societies in Toronto at the Hilton-Harbour Castle Hotel. For information, contact: Canadian Pain Society, 3655 Drummond St, Room 1202, Montréal, Québec H3G 1Y6.

November 18: Sicher Memorial Lecture sponsored by the Alpha Omega Dental Fraternity at the Westin Bayshore Hotel in Vancouver, BC. "New Horizons in Dentistry" with David Garber. For registration contact: Dr. W.C. (Fred) Weinstein, #515-750 W Broadway, Vancouver, BC V5Z 1H4.

Novembre 21-24: Congrès international de l'Association dentaire française et le Festival international du Film et de la Vidéo dentaires à Paris. Renseignements: A.D.F., 92, av. de Wagram, 75017 Paris, France.

November 23-25: Swedish Dental Society in Stockholm Sweden. For information, write: Ms A.C. Nackstad, Nybrogatan 53, S-114 40 Stockholm, Sweden.

November 24: 51st Annual Winter Clinic Toronto Academy of Dentistry at the Metropolitan Toronto Convention Centre, 255 Front Street W, Toronto, Ont. For information, contact the Academy of Dentistry at (416) 967-5649.

November 28–December 2: Osseointegration in Clinical Dentistry Clinical Training Course in Malmo Sweden. For more information, contact: Postgraduate Centre of Dentistry, Carl Gustafs vag 34, S21421 Malmo, Sweden.



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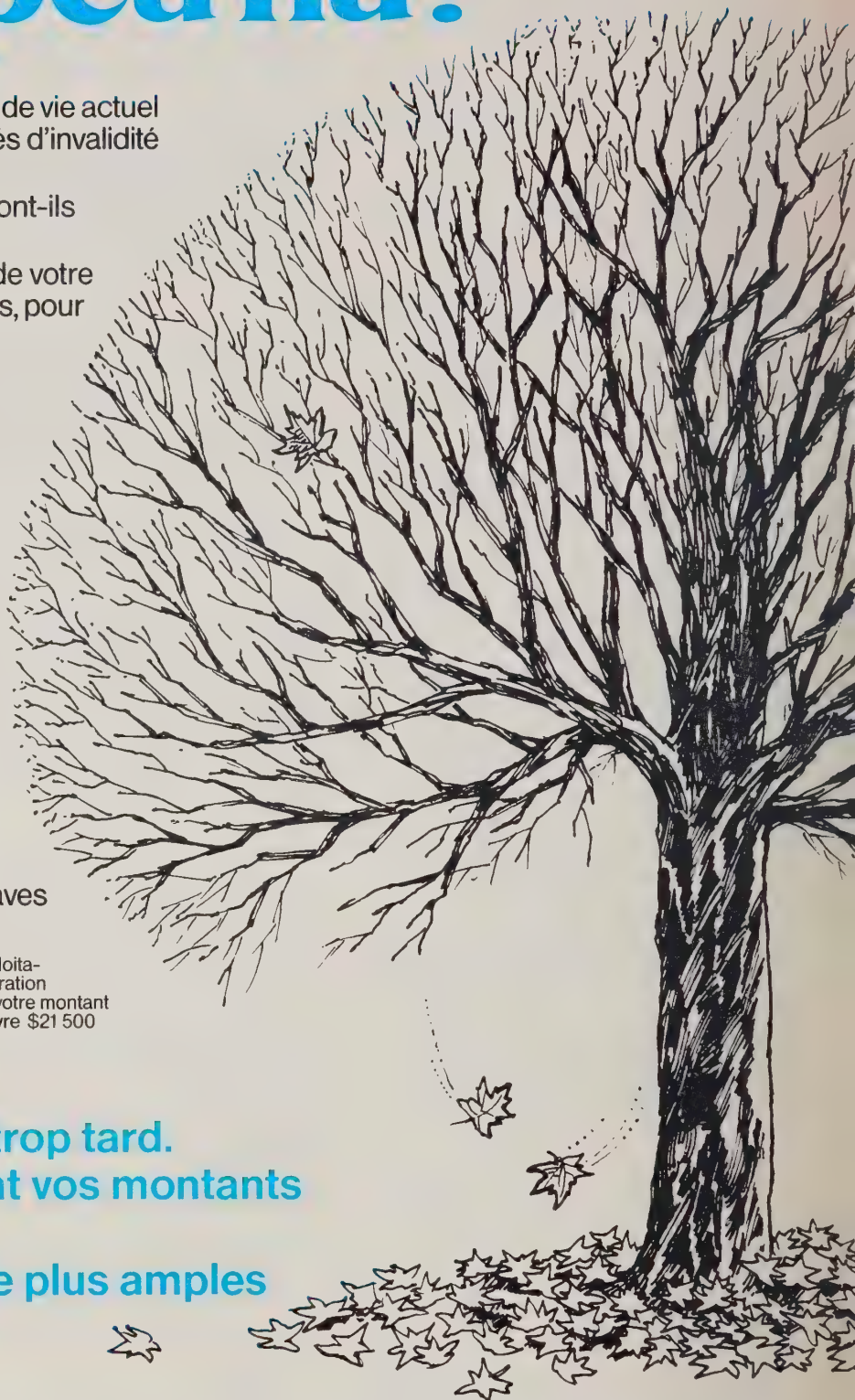
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BRITISH COLUMBIA—Fraser Valley: Well-established, larger, modern family practice. Presently busy for associate and principle. Owner reluctant to leave but must accommodate family needs. Reply to CDA Box 2406.

BRITISH COLUMBIA—Sooke (near Victoria): General family practice established 13 yrs. Providing all facets of dentistry. Well located in growing community. Large patient base will assure continued good income and steady growth from active recalls and new patients. Terms negotiable. Dr. John Bidgood. Business (604) 652-2521 or (604) 642-3535 or Home (604) 652-4114.

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ONTARIO—Ottawa: Dental office space available in downtown location. Landlord will provide generous leasehold improvement package. Call (613) 234-4386 daytime.

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Back Talk

By Jean Cives

Plain English

As a dentist in Chicago suggested to me one time "Use only 5000 words — so many Poles, Swedes, Germans and others live here — that's the size of their English vocabulary". Contrasting this was a question I saw in a textbook the other day. It asked if the lingual ridge of the mesiofacial cusp were distal limits of the mesial or the distal fossa of the mandibular first molar. A many-years-ago, a young orthodontist returned with bright shiny bands to wire up the youth of his small home town in the country. On the first Friday, his 1 p.m. patient presented with the style and subtle fighting of tooth-to-tooth contact similar to the willows along the South Saskatchewan River. He carefully explained to Mom how, with wire and band, and a little money, he could re-arrange these to resemble a Saskatchewan marching ensemble. She thought for a bit and said "O.K. but you'll be sure to be finished by 4 p.m., cos we gotta bus to get at 5." Not much later he took a job at a dental school, I think on the grounds that they have there codified such confusion. Students and faculty and staff all completely misunderstand each other. My uncle-dentist was deaf, and he coped with these problems by not hearing anybody.

Thus Uncle had a blissful life as he went about untroubled by controversy, a smile of serenity on his face, and determination to keep at a goodly distance from the human race. I remember him as the retiree-dentist aged 80, stone-deaf, genial, and in the trunk of his car he carried the tin-box that had contained his denture making kit from First Year Dentistry in 1903 or sometime that era. Within this box were forceps for extracting spark plugs or crimping loose wires or whatever, the odd chisel, hoe or hatchet (numbers unremembered) for stripping wire, adjusting the points, or general use in and around the car and Tent City. Never went anywhere without his emergency kit — never ever used it either he admitted cheerfully. Back to the English language as heard today, and Uncle did not miss much!

For example, you must admit that any

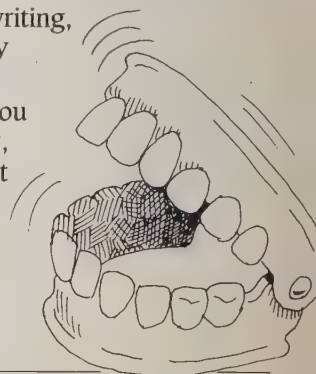


seminar, paid or free, called "Communication Skills and Interpersonal Relations" has got to have a mentally handicapped author. It is a figure of speech — an apparent contradiction — like "University Decision" or "Military Intelligence". If he/she really meant it, they would say "Speaking plainly and making friends". We all know that getting interpersonal with relations is the quickest way to family feuds. It is about as bad as a fee guide I saw the other day which allowed x dollars for removal of implants — seemed threateningly counter-productive. Dental students are so proud of their interpersonal communicative "skills" that on graduation they suspect all patients yearn to be dentists. So they bombard the patients with all manner of mesial inclines and pocketdepths. Medical persons are equally bad — one lady told me once she had a thing like a wheel inside her going round. I immediately felt that an x-ray would reveal the rear wheel of a tricycle spinning around on an axle about four inches above the navel. Apparently, her doctor, idly pointing generally at her ample tummy, had told her "It is a vicious cycle that makes you feel that way".

This leads to a bit of philosophizing. I have yet to hear a clear explanation of what that Dr. Before-me said or did. I shudder to hear my own patients recount what it was I told them last week. About

the last thing in this world which should signal any action is a patient's description of his/her previous procedures. A serious note — much professional annoyance is created this way. Its a curious fact that the picky patient, the one whose expectations are unfulfilled, has the worst version of what has happened. Of all the unlikely statements you will hear from them is "I was always ten minutes late, I wriggled in the chair all the time. I never ever said what I really wanted. I thought that if I had six anterior crowns, my hairline would stop receding, I would lose 40 pounds, would be six foot tall, look like Ramon Navorro, and act like Errol Flynn". This actually happened to a wee Scottish patient of mine. I put two front teeth back on his wretched partial one Saturday morning in exchange for a cup of coffee. His wife and daughters met in session Sunday morning, and called me. They thought he had been altered for the worse. I bluntly said, "Hey, you guys have not looked at Angus once in the last 20 years — he has been part of the furniture. Pool fellow. This is the first time you've noticed that he's bald, five foot four, looks at least 65 although only 50, and what's more still talks as if he had inhaled a ping-pong ball". They called back an hour later to confess he was the same lovable old Angus, and thank you.

As for dental journals — well for several years the Krebs' Cycle was all the rage. It was invented when I was learning the dollars and sense of Dentistry — hand-piece and forceps creating holes in teeth and bone. I finally found a drunken dental student who would not reveal my identity and asked what the hell it was. His explanation was clearer than anything I had read. Instructions for authors thus should read that before writing, consume a goodly amount of liquor and tell us what you really want to say, instead of hiding it beneath the ten thousand words you learned in Dental School. Δ



Butler

TAKES THE EXTRA CARE

Only Butler® Tapers, Satinizes and Rounds* Toothbrush Bristles For Effective Plaque Removal†



Take a close look — you be the judge!

Unretouched microphotographs of leading toothbrushes show that while some have rounded bristles, none is tapered and satinized like Butler.

Bristle Design Is Important

With any toothbrush it's the bristles that actually remove the plaque.

So the single most important feature of a toothbrush is the effectiveness of its bristles. That's why, in 1967, we originated a process that gave us a bristle designed specifically to remove plaque.

We taper each bristle for extra flexibility without compromising its strength, and at the same time reduce the diameter of the tip. This permits it to reach deeper into the sulcus and interproximally, while the body of the bristle provides the strength needed to displace the plaque. Then the tip is rounded, making it gentle to soft tissue — less likely to cause trauma and bleeding. Finally, we actually texturize the bristle with a process called satinizing. Unlike a smooth, polished bristle that slides through plaque, the satinized bristle picks up and removes plaque better and carries it away.

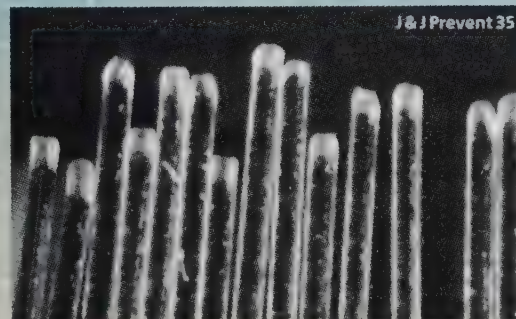
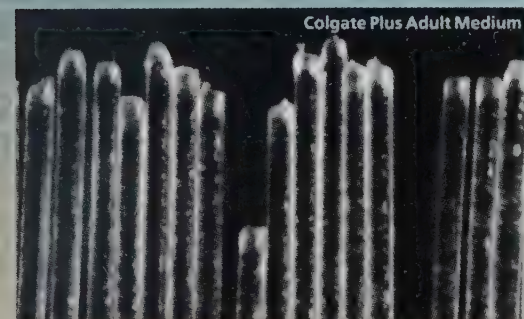
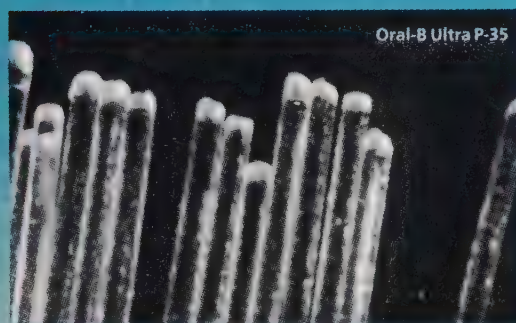
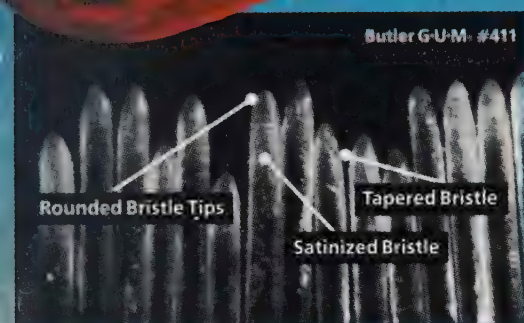
Special Features Make Butler G·U·M® Toothbrushes Unique

Butler G·U·M® brushes also feature a narrow, rounded head for comfortable access to posteriors and wide, lever-grip handle for easy manipulation in the dental arch.

Studies Prove It Effective in Controlling Gingivitis

Recent studies conducted at the University of Michigan, USA and the University of Berne, Switzerland indicate that the Butler G·U·M® #411 toothbrush actually reduces Gingivitis. The scientific community recognizes that the control of Gingivitis is the most useful approach in preventing the development of periodontitis!

Write for complete catalog and prices.



Only Butler provides all three bristle processes for more effective plaque removal. It's because we take this extra care that a Butler toothbrush is a more effective brush for your patients.

*C. Mark Gilson, DDS, MS; Gerald T. Charbeneau, DDS, MS; and H. Charles Hill, DDS. All members of the faculty of the University of Michigan School of Dentistry — A comparison of physical properties of several soft toothbrushes.

†Dr. Harald Loe, Director, National Institute of Dental Research — Principles of aetiology and pathogenesis governing the treatment of periodontal disease.

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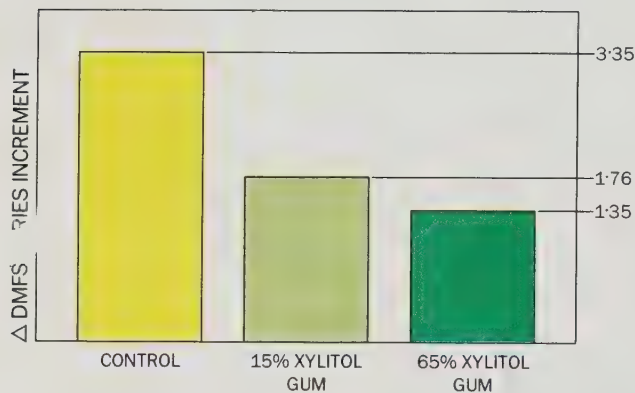
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Now, new studies prove that Trident with **xylitol** helps fight cavities.

Xylitol is a naturally-occurring sweetening agent found in plants, vegetables, even the human body. For years, scientists have suspected that this natural substance may play an active role in cavity prevention. Now, new clinical studies prove it.

Independent trials¹ conducted by international



This one-year study conducted by the Montreal General Hospital and the University of Montreal, Department of Preventive and Community Dentistry, on 433 eight and nine year old Montreal children clearly demonstrates a protective effect of xylitol-containing chewing gum in a school caries preventive programme. (The control group had a normal diet and preventive programme.)

institutions such as the World Health Organization have substantiated existing evidence, gathered through concentrated research over the last ten years, that indicates xylitol cannot be metabolized by decay-causing microflora in the oral cavity.

Trident Sugarless Gum, which contains xylitol², is now being recognized as more than just a harmless treat. When used at least twice a day, it has been proven to be an important adjunct to the regular oral hygiene programme of brushing, flossing, rinsing, and having fluoride treatments plus biannual dental check-ups.

Now, you can recommend Trident as an effective way to reduce the threat of acidogenic action after carbohydrate snacking, especially for young, caries-prone patients. And, the great new taste of Trident means that patient compliance is assured.

Trident. More than just a treat.



¹ Reg. T.M. Warner-Lambert Company, Adams Brands Mfg. Auth. User.

¹The Finnish Xylitol Study, 1982-1985. The French Polynesian WHO Study, 1979. The WHO Hungarian Study, 1981-1984. The Montreal Chewing Gum Study, 1987. Case studies available upon request.

²Trident Peppermint, Cinnamon, Freshmint, and Fruit flavours only.

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